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IRREGULAR PRACTICE AND QUACKERY*

By Sir Humphry Rolleston, Bart., K.C.B., M.D., D.Sc., LL.D.

Regius Professor of Physic in the University of Cambridge

IRREGULAR practice and quackery—the two parasites, not to say abuses, of orthodox medicine though allied, are not identical; strictly speaking irregular practice is that carried on by unqualified persons who are usually innocent of any sound knowledge of the healing art, though they may possess some special skill or knowledge in a limited department, for example bone-setters.

The word "quack" is said to be derived from "quack-salver"—one who puffs his salves; there are other suggestions: that it is derived from the German "Quecksilber" because mercury was in the early days of syphilis much employed by irregular practitioners; and in this connection it may be recalled that Thomas Dover, M.B. Cambridge 1687, of the powder and buccaneering fame, was dubbed the "quicksilver doctor" from his fondness for prescribing this drug to his patients as a specific for almost every disease, as is shown in his treatise written "for revenue purposes only," "The Ancient Physician's Legacy to his Country" (1732). Steiner[1] gives other reputed derivations, such as from quake-doctors or irregular doctors who treated patients shaking from malaria.

To quack is to extol a valueless method of treatment and may be done by a qualified as well as by an unqualified man, and it is not inconceivable that an interesting article might be written on the history of "Quackery in high places." It may of course be born of honest but short-sighted enthusiasm, and in such circumstances is likely to be found in men of one idea. It is characteristic of the quack that he applies his remedy to all manner of diseases irrespective of their nature or origin. Attached to the most pronounced forms of quackery is the further association of exploitation of a patient for excessive gain.

Quackery is as old as the ages; it existed in ancient Greece and met with the disapproval of Hippocrates and the satire of Aristophanes. In the dark ages it was often far from easy to distinguish quacks from orthodox practitioners, for the latter were generally more or less tinged with superstition. In the 17th century the existence of quackery was a burning question, as is shown by Charles Goodall's *Historical Account of the College's Proceedings against Empirics and irregular Practitioners*, London, 1684, "Dedicated to the Right Worshipful Dr. Whistler, The Censors and Fellows of the College of Physicians in London." Oliver Goldsmith in "Letters from a Citizen of the World to his Friends in the East" (1762, letter xxiv) draws a satirical picture of English medicine in the eighteenth century:—"There is scarcely a disorder incident to humanity against which they are not possessed with a most infallible antidote. . . .Few physicians here go through the ordinary courses of education, but receive all their knowledge of Medicine by immediate inspiration from heaven. Some are thus inspired even in the womb; and what is very remarkable understand their profession as well at three

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years old as at three-score. . . . . The people here judge as they do in the East; where it is thought absolutely requisite that a man should be an idiot before he pretended to be either a conjuror or a doctor." Perhaps Goldsmith's own failure in practice sharpened his criticism of his colleagues.

It has been said[2] that there are three main causes of quackery; the inherent tendency of human nature to delude itself; the failure of orthodox medicine to cure many diseases, as witness the popularity of any nostrum for the cure of cancer, and the dishonesty of the unscrupulous who trade on the credulity of both the foolish and the wise.

Treatment can be logically based only on an accurate knowledge of the nature and cause of the disease. Samuel Gee, whose aphorisms always repay re-reading, paraphrased Demosthenes by saying of medicine that the most important thing is diagnosis, the next most important diagnosis, and the third most important diagnosis. Since the medical profession lays such stress on diagnosis while the lay public are naturally interested only in prognosis and the results of treatment, it is not surprising that misunderstanding of the real position occurs on the subject of irregular practitioners, who proclaim their successes in treatment and thus attract the lay sick away from the less assertive practitioners of orthodox medicine. Advertisement is an essential part of the equipment, and a show of pomp and circumstance, so as to impress his clients, a prominent element of the stock in trade of a quack and may be directed, like the brass band of the itinerant patent medicine vendor, to attract and awe clients; this was practised by the more expensive, elaborate, and refined methods adopted in the seances of Count A. Cagliostro (1745-1795) *the* charlatan of the eighteenth century, and of F. A. Mesmer (1733-1815) with his magnetic cabinet, also in Paris. Bluffness and pomposity even to rudeness, so as to simulate honesty and independence, are not without their values to the quack, and are, it must be admitted, sometimes adopted by the duly qualified practitioner. For a time irregular practitioners and their cults may flourish like the green bay tree, on the credulity and impressionability of the lay public, but eventually the bubble bursts and they pass into the limbo of forgotten frauds. An example of the power of majestic suggestion was touching for the King's evil by sovereigns from the time of Edward the Confessor (1044) to that of Anne (1714).

Spiritual healing is no new cult; from the earliest times the priesthood have supervised the ills of the body as well as those of the spirit. Here is an example in the eighteenth century not unparalleled in more modern times:—In 1789 Mr. and Mrs. Loutherbourg of Hammersmith set up to cure without medicine; God, they stated, had endowed them with the miraculous power of healing the sick poor by looking upon them and touching them. This had a great vogue and Miss Mary Pratt, probably acting in conjunction with the healers, wrote to the Archbishop of Canterbury setting out their "gift of healing all manner of diseases incident to the human body, such as blindness, deafness, lameness, cancers, loss of speech, palsies."

It has been said that education of the masses and of the classes, on the second of whom the quacks and irregular practitioners mainly subsist, is the only way of remedying the evil; but with all the great improvements and expenditure in education there is now as much, or more, irregular practice as in the past.

The advance of the proprietary, patent and quack medicine traffic in the last 70 years, as shown by the stamp duties paid on them—£43,366 in 1860 to £324,112 in 1906—may to some extent be the fault of the medical profession, which in the second half of the last century when specially under the influence of morbid anatomy, passed into a state of therapeutic nihilism. Dixon[3] ascribed the financial success of proprietary drugs to the failure of the medical schools and universities of this country to promote proper departments of pharmacology. Another reason for the popularity of proprietary medicines in the past is that the composition of many of them was kept secret, for the adage *Omne ignotum pro magnifico* holds good and the secret nature of a remedy gives wide scope to the imagination, thus exerting a fascination which may be dispelled by a label revealing the familiar and harmless constituents. The publication by the British Medical Association of *Secret Remedies* (1909 and 1912) has shown up the fraudulent nature and,

by giving the cost price of the constituents and the selling price, revealed the excessive profits of many such products, but of course all proprietary or patent medicines are not frauds. Some are derived from the prescriptions of physicians of experience and consist of combinations found empirically to be specially effective, and indeed the *British Pharmacopœia* has paid some few of them the compliment of copying them.

We are all attracted by novelty, and the public not being able to judge of medical matters on their merits always have, and, unless human nature changes in an entirely unexampled manner, always will become enamoured of irregular practitioners and of quackery. As Dr. John Brown of Edinburgh remarked in *Horæ Subsecivæ* "Quackery and the love of being quacked are in human nature as weeds are in our fields." The public naturally enjoys making, as it thinks, discoveries for itself in the way of healers and in finding a short cut to a cure, and the influence of suggestion often ensures that any new treatment will, at any rate for a time, be beneficial.

The story of human credulity and of medical follies, fads, and fancies is long, and as in spite of the influence of science in correcting superstition human nature remains much the same, wonder-cures will always be demanded by the mind of man. The popularity of all sorts and conditions of quack medicines and their expenditure on advertisements prove that there is a large body of the faithful. Auto-suggestion and faith often lead to temporary improvement when any form of treatment is employed, and every successful doctor, who "inspires confidence," by kindly and firm encouragement is consciously or unconsciously practising suggestion. On the other hand, as Oliver Wendell Holmes remarked, "So long as the body is affected through the mind, no audacious device, even of the most manifestly dishonest character, can fail of producing occasional good to those who yield it an implicit or even partial faith."

That no amount of talent or eminence in other branches of learning *ipso facto* can make those thus distinguished good judges on medical matters is shewn by many historical examples as well as by contemporary experience. Sir Kenelm Digby (1603-1665), a kind of "Admirable Crichton," and perhaps best known to medical men for his *Observations* (1643) written in less than 24 hours after reading Sir Thomas Browne's then recently published *Religio Medici*, was an enthusiastic advocate of "the sympathetic powder" which was reputed to have the power to bring about cure of injuries when applied, not to the patient but, to his blood-stained clothes, even though at a distance. The powder was brought to Europe from the east by a friar who communicated to Digby in return for certain kindly services the secret of its composition. This turned out to be sulphate of copper endowed with its wonderful properties by a somewhat elaborate process of preparation. Digby delivered a discourse to a solemn assembly of nobles and learned men at Montpellier, on the cure of wounds by the sympathetic powder with instructions how to make it, which was translated into English by R. White (1658). But before this Dr. James Primrose, who is otherwise unfavourably known to us as a young man in 1630 opposing Harvey's recent discovery of the circulation of the blood, ridiculed the sympathetic powder and its predecessor the sympathetic ointment in his *De Vulgi in Medicina Erroribus* (1638). The sympathetic ointment or weapon ointment (*unguentum armarium*) also had a great vogue for the healing of wounds, and probably was beneficial, as an incidental part of the ritual was that the wound should be washed and then bandaged up; Paracelsus in *Archidosus magica* (1526) gave his prescription for it; when a wound had to be healed the weapon, not the wound, was anointed, or a splinter of wood dipped in the blood was dried and then put into the ointment; this alternative was presumably more practical in the absence of the weapon which inflicted the wound. The wound was bandaged every morning with a new cloth dipped in the patient's urine. Another example of the inability of genius to dogmatize on matters medical is to be found in George Berkeley, Bishop of Cloyne, who, universally admitted to be one of the most accomplished, learned, and wisest of men, advocated as a panacea to avert and cure all diseases water with which tar in the proportion of a quart to a gallon had been mixed and after two days the clear supernatant fluid poured off; this great metaphysician, adopting the abbreviated rôle of a physician, wrote his discovery up in *Philosophi-*

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cal Reflections and Inquiries concerning the Virtues of Tar Water (1744).

It must, however, be admitted in all fairness that medical men are not infallible guides on these matters when carried away by misguided enthusiasm or other impulses; John Elliotson (1791-1868), senior physician to University College Hospital, and portrayed as Dr. Goodenough by Thackeray who dedicated *Pendennis* to him, was ruined by his honest but ill-advised support of dishonest mediums and animal magnetism in 1838. Dr. Elisha Perkins, the one time respected country practitioner of Norwich, Connecticut, and subsequently the inventor of the "Patent Tractors," is another example. Starting reputably in medicine, like Perkins, Albert Abrams (1864-1924) led an average medical existence till 1909; he was Professor of Pathology in Cooper Medical College, San Francisco (1893-98) and President of the San Francisco Medico-Chirurgical Society in 1893. But in 1909 he published "Spinal Therapeutics" and in 1910 "Spondylotherapy,"—his first divergences from orthodoxy and approach to osteopathy—and in 1916 "The Electrotonic Reactions" which had such a boom.

The story of Perkins' metallic tractors shows the sensational success and fall of a quack method of treatment; Elisha Perkins (1740-1799), born at Norwich, Connecticut, was a graduate of Yale and for years a respectable country practitioner, until in 1796 he brought out the metallic tractors; these were two rods of metal, one supposed to be of copper, zinc and a little gold, the other of iron with some silver and platinum, but probably only brass and iron, costing a shilling to make and five guineas to buy, about three inches long, pointed at one end, blunt at the other. They were employed for the relief of pain, rheumatism, inflammation, and tumours by drawing them very lightly over the affected part for about 20 minutes. This method recalls the practice of one Eleazer, described by his contemporary Josephus (1st century A.D.), who drew demons out of the bodies of their victims by means of certain roots attached to a ring placed in the nostrils of the sufferer (*vide* Jastrow[4]). Perkins, however, was thought to have taken the idea from Galvani's recent demonstration of muscular contraction as the result of contact with two metals, and he asserted that they acted in virtue of the electricity conveyed to the tissues; this cult was an example of the exploitation of electricity, a force of compelling power for the imagination, as has been often shown in later years, for example by electric belts. The tractors were patented and became highly popular and profitable, for whether or not they extracted pain or poured electricity into the body, they certainly drew much money from the pockets of the dupes. Elisha has been thought to have been an enthusiast and to have deluded himself; but his son Benjamin Douglas Perkins was of a shrewder steel; about 1795 he carried them to Europe, first to the Royal Hospital, Copenhagen, where they were reported to cure a number of cases, and then to London where they were received with great acclaim. Perkins was clever enough to take rooms in John Hunter's old house, 18 Leicester Square, and the tractors were declared to cure many conditions in addition to those mentioned above, such as sprains, burns, boils, epilepsy, tetanus, and pleurisy. The aristocracy and the Church enthusiastically supported him, and a Perkinean Institute in 1804 to bring this new revelation of "Perkinism" within the reach of the poor was founded with a peer as president; a fashionable divine declared that no home was complete without the tractors, which sold like hot cakes at an inordinate price. That functional paralysis and hysteria should yield to the suggestive tractors is no more surprising than the miracles of Lourdes, or the frank suggestions of Arthur F. Hurst and L. R. Yealland; but the remarkable feature is that stimulated imagination made witnesses believe that they had seen sudden disappearance of ulcers, tumours, and burns. The bubble, however, was pricked in 1800 by the pamphlet of John Haygarth, M.D., F.R.S., of Bath and the "Nodes", "On the Imagination as a Cause and as a Cure of Disorders of the Body," in which he showed that wooden imitations so painted as to resemble metal ones had worked more miracles than those sold by Perkins; after some indignant protestations the tractors were forgotten. James Gillray caricatured Perkins as a quack doctor extracting from the grog-blossomed nose of poor John Bull some of the stores of alcohol that had accumulated for

years in his system, the spirit issuing in jets of fire from the red-hot proboscis. Perkins retired to New York with more than £10,000 and became a publisher, but died in his thirty-seventh year.

That there is a special tendency for quacks to flourish when any branch of the healing art is neglected, or let us say, is not intensively cultivated by members of our profession, is shewn by the existence in the eighteenth century of some notorious and financially most successful quacks in diseases of the eyes.

Sir William Read, originally a tailor, became "sworn oculist" to Queen Anne, who knighted him, and to George I, though he could hardly read the book of which he was the reputed author *A Short but Exact Account of all the Diseases Incident to the Eyes* (1706); he succeeded with the help of impudence and some scraps of Latin in his advertisements in obtaining a great reputation for learning. In the first chapter of his book he carried the war into his rivals' country by describing *Some Errors Committed by the Pretended Practitioners for the Eyes.* On his knighthood, awarded for curing many sailors and soldiers of blindness, thus shewing the existence of war neuroses then, he hired a poet to write *The Oculist, A Poem* (1705). Apparently all was grist that came to his mill, for he cured abdominal dropsy without tapping, and cancers of the breast by operation and the styptic water, (*vide* James[5]). His wife assisted him, and after his death at Rochester in May, 1715, she carried on his business in the Strand.

Roger Grant, after being a cobbler and anabaptist preacher, also became "sworn oculist" to George I after Read's death; he was very vain and had his features engraved and distributed; one of the recipients exposed the portrait with the epitaph:

"See here a picture of a brazen face,
The fittest lumber of this wretched place.
A tinker first his scene of life began;
That failing, he set up for cunning man;
But wanting luck, puts on a new disguise,
And now pretends that he can mend your eyes;
But this expect, that, like a tinker true,
Where he repairs one eye he puts out two."

John Taylor (1703-1772), known as Chevalier Taylor, and described by Samuel Johnson as the most ignorant man he ever knew, was one of the most impudent quacks of the eyes. He was the son of a female apothecary at Norwich, acquired some knowledge of the eye at St. Thomas's Hospital under Cheselden, but, failing as a general practitioner in Norwich, went abroad and is said to have collected Doctorates of Medicine at Bâle (1733) and at Liege and Cologne (1734). He travelled as an itinerant oculist abroad and was appointed oculist to George II in 1736. Making London his headquarters, he travelled widely as an oculist, always preparing the way by advertisements and lectures laudatory of his skill. Indeed it appears that he was not without considerable dexterity, but he attempted to cure all cases and promised everything. "No one knew better than he the art of puffing himself. Even the modern American advertising quack pales into insignificance before this mighty master of the art of beating the big drum."[6] It is perhaps noteworthy that he became blind before his death. His son followed in his footsteps, and his grandson, John Taylor (1757-1832). The last named, though he practised as an oculist, was not qualified, and was more interested in the stage, being dramatic critic and subsequent Editor of the *Morning Post;* he also wrote much theatrical literature.

Another notorious quack who died of the disease he professed to cure was John St. John Long, (1798-1834) the son of an Irish basket-maker and Jack of all trades; for a time he followed in his father's steps, but when 18 years old was, on account of some artistic promise, financed to attend the Dublin School of Design and painted some pictures. In 1822 he came to London, and in 1827 professed to cure consumption, rheumatism, and other diseases by the external application of corrosive liniment containing turpentine and a mineral acid; a vapour and friction. He became a popular success, moving to 41 Harley Street, which was obstructed by the carriages of his credulous patients; in the year July, 1829, to July, 1830, he made £13,400, chiefly from women clients. He was twice tried for manslaughter; on the first occasion in 1830 he was fined £250, which he paid, on the second occasion he was acquitted. He died, like the younger Perkins, at the age of 37, an age said to be fatal to genius, on July 2, 1834, of pulmonary tuberculosis, which he did not treat by his own methods.

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Homœopathy

Samuel Christian Friedrich Hahnemann (1753-1843), often regarded as the father of homœopathy, was at any rate its popular exponent. He was a German and a teacher in the University of Halle where Michael Albertus was the author of three essays *De Curatione per Similia, De Curatione per Contraria,* and *De Curatione per Expectionem.* The doctrine of contraries derived from the Greeks and leading to treatment of disease by their apparent opposites, such as fever by cold, did not appeal to Paracelsus (1493-1541) who brought in the theory of similars, which thus provided the basis for homœopathy. Hahnemann started as an orthodox practitioner according to the lights of his time, but, impressed with the unsatisfactory results of ordinary treatment, abandoned free drugging and adopted the principle of *Similia similibus Curantur,* giving infinitesimal doses; between 1796 and 1828 he published a number of books on his cult, *The Organon of the Healing Art* (1810), *Pure Materia Medica* (1811), and the *Treatise on Chronic Diseases* being the best known. In addition to the axiom "Like cures like" and the efficacy of very minute doses, he insisted that seven-eighths of all chronic diseases were due to an infectious disorder, *Psora* or a suppressed itch, which exerted its action on the interior instead of the exterior of the body; this might fairly be regarded as an inkling of infection by the then unknown bacteria. His three constitutional dyscrasiæ were syphilis, with mercury as its remedy; sycosis due to the effects of gonorrhœa, with thuja as its curative agent, and the above mentioned psora curable by sulphur. Von Grauvogl called these three constitutions (i) the oxygenoid characterized by an excess of oxygen, (ii) the hydrogenoid with an excess of hydrogen and consequently of water in the blood and tissues, and (iii) the carbonitrogenoid characterized by an excess of carbon and nitrogen. Besides choosing the name homœopathy for their own cult, homœopathists have obligingly applied the term allopathy to the ordinary practice of medicine.

Although the professed principles and practice of homœopathy do not hold good in the light of medical knowledge, for they have often been tested, it must in fairness be admitted that it had a beneficial influence in calling a halt to indiscriminate drugging, such as occurred when apothecaries, as the general practitioners of a bygone age were called, received fees only for the medicines, pills, and so forth which they provided, and nothing for their advice. In fact Oliver Wendell Holmes, who vigorously exposed the fallacies of homœopathy in 1842, and it may be remembered was an anatomist, gave vent elsewhere and eighteen years later to the forcible dictum, "I firmly believe that if the whole materia medica, *as now used,* could be sunk to the bottom of the sea, it would be all the better for mankind,—and all the worse for the fishes."

Bone-Setters

Bone-setters have long existed in this country, and the skill that individual performers possessed was often handed down from father to son. That they certainly cured cases which orthodox practitioners had failed to relieve, especially by breaking down articular adhesions, there can be no doubt. What was sound in their methods has been adopted by orthopædic surgeons who practice manipulative surgery. The mistake which, from insufficient training and knowledge, bone-setters are liable to make is in not recognizing fractures and tuberculosis or malignant disease of bones entering into a joint or in the spine, and wrenching the part in a way that may be immediately successful in breaking down adhesions or getting back into its proper situation a tendon that has been displaced, but leads to disaster in the conditions actually present. The success of bone-setters long preceded and may well have suggested osteopathy in the United States of America.

Osteopathy

Osteopathy was started about 1874 by Andrew T. Still (1828-1910) of Kirkville, Missouri, who stated that not only were drugs useless in treatment, but were responsible for most diseases, and based osteopathic treatment on manipulative removal of pressure on nerves or vessels exerted by displacement of bones, especially vertebræ, cartilages, ligaments, tendons, muscles, or fasciæ. All diseases are regarded as due to "osteopathic lesions;" for example, conditions such as ulcer or cancer of the stomach are regarded as secondary to osteopathic lesions; the treatment, therefore, of all diseases

is on the same mechanical lines, the reduction of subluxations of the vertebræ. This conception appears to have come to him as a sudden revelation. In 1894 the charter of the "American School of Osteopathy" was granted, and in some States of the Union osteopathy is by legal enactment the practice of medicine. The degree of Doctor of Osteopathy—D.O.—Which this University must regard as the sincerest form of flattery to its Diploma of Ophthalmology, is given by the Schools of Osteopathy. D.C. — Doctor of Chiropractic — and Ph.C. — Philosopher of Chiropractic—are conferred by Chiropractic Colleges. Osteopaths have now considerably broadened the original tenets of the cult and now employ anæsthetics, antiseptics, narcotics, and Abrams' box, so as not to be left behind in their race for gain, either by regular or rival irregular practitioners. There is a British Osteopathic Association which contains some qualified medical men, and is trying to obtain some sort of official register.

Chiropractic

Chiropractic, which has a close resemblance to osteopathy, and has been called "its unwanted brother," though the followers of the two respective cults do not admit their relationship, also had its birth in America which is probably the most highly organized industrial country in the world. The idea of chiropractic, like that of osteopathy, is reputed to have been suddenly conceived about the year 1894, or twenty years after the birth of osteopathy, by the founder D. D. Palmer, who while practising as a magnetic healer probably attended the classes of Andrew Still. Its doctrine is simple; namely that disease is due to pressure on the spinal nerves by dislocation or subluxation of the vertebræ, and the treatment is to remove the pressure. B. J. Palmer, the son of the founder, runs a chiropractic school at Davenport. Iowa, where in 1921 there were three to five thousand students annually; other chiropractic schools have arisen and fallen foul of Palmer's school because he has added an instrument, the neurocalometer (really a thermopile), to the outfit of the chiropractor, which cannot be bought, but is leased, like Abrams' oscilloclast.

A variant of osteopathy and chiropractic is napropathy; according to this cult manipulations are applied to the nape of the neck as the nearest available site to the medulla oblongata, where the basal centres of life are located.

The rationale of these cults is crude, and their methods too often obvious and commercial—adverse criticism of orthodox medicine, advertisement and cocksureness. In discussing the remedies that might be employed for the good of the public so that they should realize the true state of affairs, Sir Holburt Waring[7] suggested education in hygiene in schools, or that a scheme of propaganda with films and lectures should be carried out by an authoritative body, such as the General Medical Council or preferably the Ministry of Health.

Irregular practice, which except as recently enacted with regard to dentistry, is not illegal in this country, may have its good points, as is shown by the skill of bone-setters in breaking down adhesions; years ago Sir James Paget wrote an essay on cases that bone-setters cure. What in one generation is scorned as an obsession of a crank or a quack may become recognized as a real advance, for example the open air treatment of tuberculosis advocated by Dr. G. Bodington of Sutton Coldfield, Warwickshire, in 1840, and generally adopted fifty years later in this country after its approval in Germany. This should warn us to keep an open mind and examine every new suggestion of treatment to see if it has elements of value. Hints of value as to massage and manipulation have been adopted in manipulative and orthopædic surgery, and the empirical knowledge of wise women is not *ipso facto* illusory, for it may be based on experience. Much of orthodox treatment is based on experience and still lacks scientific confirmation; digitalis and arsenic are examples of drugs recognized of great value long before their rationale was elucidated.

Success as a result of irregular practice and of proprietary medicines may depend not only on suggestion and auto-suggestion—factors concerned in all forms of treatment—but also on shrewd directions as to diet and personal hygiene enjoined while the treatment is being followed, and indeed may be due to these accompanying directions. The Frenchman Villars in 1732 circulated the statement that his uncle, killed by accident at the age of a hundred years, had left the recipe for a nostrum which would prolong life to a hundred and fifty years, provided the laws of sobriety were always obeyed. The remedy

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was composed of nitre and Seine water and sold for five francs a bottle. This was a financial success until the secret leaked out. In many instances, Oliver Wendell Holmes estimated in 90 per cent, patients will recover from illnesses independently of treatment, and provided it is not too vigorous or dangerous under any form of treatment in virtue of the *vis medicatrix naturæ*. Just as orthodox medical men may thus be credited with cures for which they are not directly responsible, so many irregular practitioners, quacks and proprietary medicines acquire merit for cures which are *post* rather than *propter* results of their much advertised panaceas. It is important to bear this in mind, for undoubtedly such cures occur and are brought forward as evidence of the efficacy of the treatment. The great danger which the public run in flying to men who have not had a complete scientific course of medical education, is that the actual condition of disease will not be correctly diagnosed, and wrong treatment may be employed. Thus if a tuberculous joint or a myeloma at the end of a long bone and near a joint be regarded as adhesions or "a bone out of place," the manipulations and wrenching, which might successfully break down adhesions, may do irreparable damage. It is therefore desirable that the public should be able to distinguish medical men who have gone through the mill and whose qualification proves their possession of adequate knowledge from those without this necessary training. This knowledge is provided by the Medical Register which it is the function of the General Medical Council to supervise.

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The British Institute of Philosophical Studies—We publish in another column an importantly-signed letter bringing before our readers the objects of the British Institute of Philosophical Studies, and indicating clearly how useful such studies might prove themselves to medical men both in general and special fields. Lord Dawson and his co-signatories suggest that the modern developments of medical science bring with them difficulties to medical men because the range of exact knowledge and accomplishment is much enlarged, and evaluations have become in every medical direction more hard to make; and also because medicine is now taking its place in a marked manner in general matters, while society at large is an increasingly complicated affair. The followers of medicine are therefore required to think logically, not only on questions concerning their own science or dealing with the administration of their own calling, but to think with equal insight and equal clearness upon the part that they should play as general citizens for the common good, particularly, as when happens so frequently, the medical side of the question is of the chief public importance. The particular training of medicine provides both well and ill for the clear thinking that is necessary in all these situations. Much of medicine must be in itself a profound philosophical study, but it may easily happen that what may appear to the followers of medicine as the logical view will be in apparent antagonism to what is called common sense—not necessarily good sense. Now the Institute proposes to help its members to arrive at sound conclusions in these situations, which may present themselves either as the necessary accompaniment or complication of practice, or as problems in general sociology. As the letter to which we refer points out, the position must often arise when the medical practitioner feels the need of that comprehensiveness of vision which would come from taking counsel with those engaged on other pursuits. The British Institute of Philosophical Studies proposes to afford opportunity for just such co-operation.—*Lancet*, April 9, 1927.

From October 1st the monetary value of all the Beit Memorial Fellowships for Medical Research will be increased. The junior Fellowships will in future carry a grant of £400 a year instead of £350, whilst the fourth year Fellowships will be valued at £500 instead of £400, and the senior Fellowships at £700 instead of £600. The next election of junior Fellows will be held in July, and the Fellows then elected will be expected to begin work on October 1st. The usual tenure of junior Fellowships is three years. Applications must be made before June 1st, and further information may be had from Sir James K. Fowler at 35, Clarges-street, London, W. 1. —*Lancet*, April 9, 1927.

SECOND CONFERENCE ON THE MEDICAL SERVICES IN CANADA

Chairman's Address

By A. Primrose, C.B., M.B., LL.D., C.M., F.R.C.S.

Dean of the Faculty of Medicine, University of Toronto

UNDER the ægis of the Canadian Medical Association a conference on the medical services in Canada was convened in the House of Commons, Ottawa, on December 18, 1924, with the patronage of the Honourable, the Minister of Health for Canada. At that meeting, which extended over three days, valuable discussions followed the reading of important papers on various aspects of the public health service, medical education and medical licensure in Canada. Those who took part in the conference came from the various provinces of the Dominion, representing this country from the Atlantic to the Pacific. It was indeed a national representative meeting, in which was fostered a national spirit, exhibiting a keen desire by combined effort to further the ideals of national unity and achievement.

Arrangements have been completed for a second conference, and we are now convened under the distinguished patronage of the Honourable Dr. King, Minister of Health for Canada, to whose courtesy we owe the privilege of meeting in the House of Commons and the advantage of having the proceedings reported and printed.

The conference does not possess executive powers and yet, possibly because of that very fact, it wields an incalculable amount of influence in moulding opinion, upon which executive action may be taken by the various bodies represented. The value of frank discussion, under the conditions which obtain, has long been recognized by similar bodies elsewhere. One might cite the Universities' Conference in Great Britain with empire wide representation, or the Universities' Conference of Canada. These bodies give an enormous stimulus to progressive thought and influence, while at the same time serving to curb ill-conceived executive action, which might result from immature consideration or inexperience. In Canada with its extensive territory and sparsely settled population there must necessarily exist a tendency to the most aggravated form of provincialism and local prejudice. There is a real danger of becoming self centred and narrow. These conditions have been greatly ameliorated by freer intercourse among our people. Transportation facilities by rail, by motor, along our great waterways, and more recently by the air have increased enormously: our people travel more and thus the opportunity for the interchange of ideas is greater than in former years. Advantage has been taken in the varied activities of Canadian life of these increased facilities for travel. The effect may be noted in the progress made in the growth of great industries, in the exploitation of our mineral resources, in agriculture and in the development of our fisheries. This progress in material prosperity has produced increased demand for the education of our people, and as a result, our universities and technical schools have been taxed to the limit of their resources.

The Canadian Medical Association has played its part in this phase of national evolution. It is to-day one of the greatest assets in the possession of the medical profession in Canada. Its growth in recent years has been phenomenal: the annual meeting attended by large numbers, is of the greatest value, providing, as it does, an opportunity for the presentation of papers on the recent advances in medicine, and for fellowship. The *Journal* of the Canadian Medical Association has attained a high standard, and is to-day accorded its place in the first rank of scientific medical literature.

The conference at present in session, dealing as it does with the varied aspects of public service rendered by the medical profession in

* The full text of this address will appear in the official report of the conference.

Canada, constitutes a medium through which the highest standard of efficiency may be reached. The objective in view is to attain a solidarity in the profession in an effort by combined action to attain the highest ideals in our fight to preserve the health of the public and to combat disease.

The last achievement of the Canadian Medical Association is the institution of post-graduate instruction by means of lectures, clinics, and demonstrations which are conducted by men qualified for such work in all parts of Canada from ocean to ocean.

By these varied activities the Canadian Medical Association is playing a splendid rôle in building up in this country a profession which will be capable of serving the Canadian people with efficiency and credit. Indirectly these efforts will produce a national spirit of co-operation, and will foster national pride in our institutions, helping to fulfil in this manner a national ideal, which is not restricted to the medical profession, but is developing among all classes of progressive Canadian citizenship.

Public Health

We shall now turn to the consideration of public health: a subject which concerns the very foundation of all our activities as a profession of healing. The ancients considered health of paramount importance. Herophilus (300 B.C.) a Greek philosopher and physician wrote "that Science and Art have equally nothing to show, that Strength is incapable of effort, Wealth useless and Eloquence powerless if Health be wanting." It is remarkable to consider the extent of scientific progress in those early days, say from the time of Hippocrates (400 B.C.) to that of Galen (130-201 A.D.). The word physician is derived from the Greek word meaning nature and physicians were thus first styled "naturalists". Aristotle (384-322 B.C.) the son of a physician, was the most outstanding scientist of his day, in his youth he is said "to have had a bias for medicine and biology." This remarkable man has made his influence felt all through the ages, and more particularly as a naturalist. We cannot illustrate this fact better than by quoting an observation made by Darwin when he compared the accomplishments of Aristotle with those of two famous eighteenth century naturalists. Darwin says: "From quotations I have seen I had a high notion of Aristotle's merits, but I had not the most remote notion what a wonderful man he was. Linnaeus and Cuvier have been my two gods, though in very different ways, but they were mere school boys to old Aristotle."

The scientific achievement of those early days was truly remarkable, and in view of such attainment we are surprised that progress was so slow throughout succeeding centuries. As a fact, after the fall of the Roman Empire, the world was plunged back into a condition of intellectual lethargy and superstition. For many centuries the lamp of science burned low. It was not until the fifteenth and sixteenth centuries that progress again became apparent in the work of such men as Leonardo da Vinci and Vesalius: later came Harvey and thus the foundations of modern scientific medicine were truly laid. It is of interest and value to trace the influence of superstition both before and after Aristotle, not only because of its effect on medicine in past ages but because superstition is still with us, and among the ignorant to-day, as in the past, it militates against progress.

Hygiene and Religion

Andrew Balfour in a recent address on Hygiene as a world force has traced the ancient connection between hygiene and religion, "It is instructive (says Balfour) to note that some forms of religion had, and still have hygiene as a basis. Rites of purity and certain forms of exercise are, to this day, closely associated with religious observances. Both Moses and Mahomet were hygienists of no mean order." To those familiar with the Hebrew scriptures the rigid requirements regarding certain hygienic prescriptions are well known. The religion of China or of India was unable to check the ravages of plague and pestilence. Their methods of attack were animated largely by superstition and magic. In Holy Scripture in the book of Numbers we are told of a pestilence in which fiery serpents were sent among the people and they bit the people: then Moses, employing imitative magic, made a serpent of brass and put it upon a pole "and it came to pass, that if a serpent had bitten a man, when he beheld the serpent of brass he lived." Thus the serpent had power not only to cause pestilence but to cure it. This association of disease with the serpent is evi-

denced when we study the attributes with which certain deities were endowed and which were symbolized in a variety of ways. The usual symbol of Asclepius was a serpent coiled upon a pole, and sacred snakes were kept in his temples. Thus originated the symbol of a serpent coiled on a staff which is to-day retained as the badge of service in the medical profession. Apollo is depicted as an archer and to him was attributed the spread of pestilence by the discharge of his arrows. To this association of arrows with disease has been ascribed the modern use of the word "toxines" suggestive of arrow-poison. In the Psalms we read of the "pestilence that walketh in darkness" and "the arrow that flieth by day."

In the midst of superstition, the contagious nature of plague was recognized as early as the fourth century before Christ when Thucydides clearly enunciates the doctrine of contagion in his detailed description of the plague of Athens. Marcus Terentius Varro (116-27 B.C.) actually ascribes disease in animals to living organisms beyond the range of human vision. Throughout history the spread of disease has been associated with war and with famine. This has been the case ever since the early records of the old Testament, where we find sword, famine and pestilence in lurid combination. "The eighteenth century in Ireland, even when war was absent, was an unbroken record of famine and typhus, and Ireland, was quit of epidemic typhus only when she had so widened her area of supplies as to ensure immunity from famine. For her deliverance from typhus Ireland is beholden to her potatoes, not to her physicians" (Crawfurd).

In the treatment of scrofula we have the interesting ceremony of the royal touch which was so much in vogue from the eleventh to the end of the eighteenth century. In the fifteenth century Edward IV introduced the custom of presenting the patient with a golden coin "the angel" valued at six shillings and eight pence. This custom has been attributed, not solely to the desire to assist the destitute, but in addition to popularize a practice which stamped the royal personage as the Lord's anointed. These angels were so called because of the figure, on the obverse of the archangel Michael piercing the dragon. They passed as current coin, and would appear to have been used in particular for the payment of physicians' fees. One quaint old herbalist has a jibe at physicians regarding the angel when he says that "like Balaam's ass, they will not speak till they have seen an angel" (Crawfurd). We have stated that the angel was worth six shillings and eight pence. Curiously enough this amount is the legal tariff paid lawyers for letters in England to-day. We have been unable to trace the connection: possibly lawyers in England have been attempting to curry favour with the angels rather than with their legendary associates! The success of the royal touch for King's evil was doubtless due to the fact that the patient was rescued from the drastic treatment prescribed by physicians of the time, consisting of strong catharties, the use of escharotics and irritating medications and plasters, occasionally a poultice consisting of sheep's dung mixed with honey. These treatments were abandoned in favour of the royal touch and the patient got a chance to recover, and did recover through the agency of the *vis medicatrix naturæ*. As Ambroise Paré was accustomed to put it quaintly at the end of his clinical record of a successful case, "I dressed him and God healed him." The same idea was expressed by a well known surgeon in England, towards the end of last century, who chose as a motto for his book on surgery, "wounds have an insuperable tendency to heal."

Many centuries passed before mankind emerged from the thraldom of superstition and magic. It is true the contagious nature of disease and its microbic origin had been suggested two thousand years ago, but the mysticism which pervaded human life and action throughout the centuries prevented accurate reasoning on a rational basis. The present day psychologist would explain away mysticism, but Dean Inge tells us that to disparage mysticism is to disparage the devotional life, "prayer is the mystical act *par excellence.*" It is, however, not inconsistent with the religious life to "prove all things, hold fast that which is good" indeed such is the apostolic injunction. It was not until modern times that contagion and the etiological factors in disease were understood.

Hygiene and Scientific Research

The rôle played by bacteria in disease, and the study and enunciation of the principles of immunity, constitute the very foundations of modern medicine. The stern facts of scientific

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discovery have dispelled the mists of superstition and have revolutionized our conception of disease as they have revolutionized many other activities in life. The work of Pasteur, Lister, Koch, Metchnikoff and a host of others in the field of bacteriology and immunity, has paved the way for the effective methods which are at present in vogue in the treatment of disease, and in enforcing the principles of preventive medicine.

The machinery, as we see it in operation to-day, in the preservation of public health, is adapted to ultilize the results of scientific research in the control of disease. From our viewpoint in Canada we find that public health activities are conducted by definite organizations, each having its own particular and well defined field of usefulness. The specific bodies concerned in this important service may be classified as Municipal; Provincial; Federal and International. Each group forms an essential link in the chain of co-ordinated effort, which to-day makes it possible to speak of hygiene as "a world force."

International Organization

The constant movement of individuals about the world to-day is the direct outcome of the increased facilities in transportation in modern times. We not only have the transient traveller to deal with, but what is much more serious from a health standpoint, the continuous migration of peoples, in larger or smaller groups, to settle permanently in a new country. The latter is of vital importance in Canada. Thus arise problems which are international in character. The federal governments of different countries must co-operate with one another to the mutual advantage of all. In addition to these intergovernmental activities we have the Health Committee of the League of Nations, and the International Health Board of the Rockefeller Foundation acting in co-operation, or as independent bodies. We took occasion at the last conference to refer in some detail to the organization of these two bodies; we mentioned the different departments of work of an international character in which they are engaged. These included the epidemiological service; the standardization of sera, serological tests and biological products; Asiatic cholera; post-war refugee problems, etc.

Dr. George Vincent reminds us that "the first European conference to consider health problems was held in 1851. Twelve nations were represented. Quarantine measures against cholera, plague and yellow fever were adopted. At intervals other congresses were called. Finally, in 1902, an International Office of Hygiene was established in Paris." It was only after the great war that an aggressive attack was made against disease, when fourteen countries, under the auspices of the League of Nations, continued to prevent the ravages of plague in Western Europe, by establishing a barrier to stop its onset. The Health Committee of the League of Nations has the direct support of 55 nations and the sympathetic co-operation of the United States of America. The intelligence service of the league has its chief centre at Geneva. By means of a grant of $125,000 from the International Health Board of the Rockefeller Foundation a centre of great importance was established in 1925 at Singapore, collecting systematically information from all the countries of the far East. It is now proposed to establish a similar centre on the West Coast of Africa. By these organizations, reporting through Geneva, the world at large is kept informed of the onset and propagation of epidemic disease, and thus opportunity is afforded to control its spread.

In addition to work undertaken and financed in co-operation with the League of Nations, the International Health Board of the Rockefeller Foundation has accomplished valuable work independently. Fellowships have been established to carry on research in many parts of the world. Effective work has been accomplished in the study and control of yellow fever, hookworm disease, tuberculosis and malaria. Institutes or schools of hygiene have been established in Brazil, Prague, Warsaw and more recently in London, England. Schools for the training of specialists have been established by the Board at Baltimore and at Harvard. Of great interest to us in Canada is the fact that from the same source funds have been provided to build and endow a school in Toronto. A building has been erected containing extensive laboratory equipment for teaching and research. This will be known as the School of Hygiene in the University of Toronto, and will be formally opened next June under the directorship of Dr. Fitz-

Gerald. It is difficult to overestimate the value of such an institution in the interest of public health activities in Canada. Not only is this school intended for the training of specialists, but in addition it will be used for the instruction of the general practitioner and of the undergraduate in medicine.

Federal Organization in Canada

Federal organization in Canada on its present basis was inaugurated in 1919 when a health ministry was established with Dr. John Amyot, C.M.G., as Deputy Minister. Under the first Ministry the Dominion Council of Health was formed, and through this channel the activities of the Provincial, and municipal Boards of Health, not only work in harmony in the various provinces, but also with the Federal Department of Health at Ottawa. Numerous other bodies are active in Canada in the interests of public health, such as the Victorian Order of Nurses; the Canadian Social Hygiene Council, waging war against venereal disease, a problem of national and international importance of the first magnitude; the Canadian Red Cross Society; the Ontario Society of Occupational Therapy, and many other organizations of national and local importance.

Dr. Andrew Balfour, the able director of the London School of Hygiene and Tropical Medicine came from England a few months ago to give an address at Baltimore to commemorate the opening of the new building of the School of Hygiene and Public Health in that city. When tracing the progress throughout the world which is to-day constituting hygiene as a world force Dr. Balfour says "Canada. . . . has in some ways more than held its own. For example, I believe the milk supply of Toronto, under the fostering care of Dr. Charles Hastings, will compare favourably with that of any other city." This acknowledgment of the able administration of one of our colleagues is worthy of note, as well as the tribute paid to the high standard of health work done in Canada as a whole.

The proceedings of the Congress at present convened will include, as indicated in the programme, the discussion of many problems of public health, local and general, as they affect our Canadian communities.

Activities for the Control of Cancer

The activities of the American Society for the control of cancer are well-known. The society has now been in operation for ten years. Its main object is to give accurate information to the public regarding cancer, asserting that cancer is a curable disease, if radical and effective treatment is carried out early; urging the necessity of consulting a qualified medical practitioner immediately, if suspicious signs and symptoms be present and describing the early indications of cancer. Organized propaganda has been carried on both in the United States, and in Canada for the purpose of fighting cancer along these lines. Similar organizations are actively at work in Great Britain.

Under the auspices of this Society a remarkable and an unique symposium was convened at Lake Mohonk, New York State, in September 20,24, 1926. The object of the meeting was to "crystallize existing knowledge" regarding the "prevention, diagnosis, cure and relief of suffering from cancer." The purpose was to collect data which would be of great value in maintaining the active fight against cancer by the Society. Some twenty Europeans attended this meeting; there were representatives from England, France, Germany, Switzerland, Denmark, Belgium, Italy and Holland. These were men engaged in special cancer work both in the laboratory and the clinic, and were specialists of the highest order and able to speak with authority and from experience. A similar group of workers were invited and attended from the United States and Canada. This unusual aggregation of authority spent four days in discussing cancer from every aspect and every angle. Many important pronouncements were made, and finally certain conclusions regarding the etiology, prevention, the treatment, and prognosis were unanimously adopted. These conclusions were published in our *Journal*.* The papers, which are of great importance, and the discussions which followed will soon be published *in extenso* and will be available for future study.

In Canada we should assist, by every means possible, the work which is undertaken by this and similar societies. There can be no doubt of the fact that cancer patients come much

* *Canad. M. Ass. J.*, Nov., 1926, xvi, 1383.

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earlier for treatment than was the case before this society became active. Every health organization in Canada should co-operate with those who are striving to bring the cancer patient under the care of a qualified practitioner at an early stage in the disease. The only positive statement we can make, after all the research work which has been carried on, is that cancer is a curable disease if effectively treated at a sufficiently early stage. If we can succeed in our endeavour to bring the patient early enough for treatment we shall undoubtedly lower the mortality from cancer in this country.

Medical Education

The curriculum in medicine demands constant supervision and reconstruction. Our chief objective in the medical school is to train students in a manner that will equip them best as general practitioners. We must make additional provision for the training of the specialist *after* he has completed a sound fundamental course of instruction common to all undergraduates in medicine. In many universities a specialist's course is provided which leads to higher degrees in medicine and surgery.

On graduation in medicine from a university and after receiving his diploma or licence, a man is officially pronounced capable of undertaking medical practice in all its intricate ramifications. Fortunately most people know their limitations and refuse to undertake, let us say, a serious major operation when they have not had the training which would qualify them to undertake such responsibilities. We must admit, with regret, that these responsibilities are occasionally assumed by the unqualified with disastrous and even tragic results.

Consider for a moment the status of general surgery as a specialty to-day compared with the conditions which formerly existed. Early in the fourteenth century the Barber surgeons were legally recognized in England, and a few years later the "Guild of Surgeons" was instituted and became a rival of the Barbers. Throughout the greater part of the fifteenth century the Barbers seem to have had control until in 1540 the two companies were united by Henry VIII. The united company was authorized to appoint four masters or governors, "two to be surgeons and two to be barbers". Barbers were forbidden to perform any surgical operations except the drawing of teeth, and surgeons were not to exercise the craft of barbering and shaving. From these primitive beginnings, and after various vicissitudes, in 1800 the Royal College of Surgeons in London emerged, which under a new charter in 1843 changed its name to the Royal College of Surgeons of England.

The teaching of surgery was linked with that of anatomy. This was its earliest association as quaintly stated in an edict of the Town Council of Edinburgh in 1505 which provided that there be handed over "anis in the yeir ane condampnit man after he be deid, to make anatomea of, quairthrow we may heif experience, ilk ane to instruct utheris, and we sall do suffrage for the soule." A similar enactment in England gave the Company the right to claim four bodies annually of persons executed for felony.

The first inclusion of surgery in the medical curriculum again illustrated its association with anatomy. In Edinburgh during the first half of the eighteenth century the first Monro gave "a few perfunctory lectures at the tail end of the course in anatomy, the Professor himself was not even a practising surgeon." In 1776 Monro secundus successfully opposed an attempt to create a professorship of surgery in Edinburgh. It was not until 1831, after the three Monros in Anatomy had monopolized the university teaching of surgery for 110 years, that the crown, on the recommendations of the Town Council, established a separate chair of systematic surgery and appointed John William Turner its first incumbent (Miles).

During the past one hundred years surgery has gradually come to occupy a position on the curriculum of study of equivalent status to that of other clinical subjects. Fifty years ago the field of surgery began to extend its limits and, because of the genius of Lister and his monumental contribution, to-day there is no region of the body which is delimited from the surgeon's skill. The technique of surgery has become more and more complicated with the result that once more we have specialties within a specialty. Take for example the surgery of the brain and spinal cord, as one of the more

recent sub-sections of surgery. In our large schools we are training men for this very delicate work, and the general surgeon recognizes that, without very special training, he is not competent to operate upon some of the special organs in the body with the skill and efficiency which is due to the patient.

Let us, however, for a moment consider the training of the general surgeon. His services are in demand in all parts of the country, and as our hospitals multiply in smaller communities the general surgeon finds increasing opportunity for work. In the evolution of the modern surgeon it appears essential that the ancient close association with anatomy should be maintained. Fifty years ago Billroth wrote a book on medical education which has recently been translated into English. He had a wonderful vision of the future, and his writings are carefully studied, because his sane arguments apply with remarkable acumen to the problems of the present day. Regarding anatomy Billroth makes this statement, "Surgery and Anatomy have many points of contact, but they are not identical: one may be an excellent anatomist, and yet not have one iota of surgical skill." The truth of this pronouncement is apparent to all, but I am sure Billroth would with equal emphasis assert that "surgical skill is of little practical value in the absence of an accurate knowledge of anatomy." The surgeon who is not a good anatomist is constantly courting disaster. A thorough knowledge of anatomy must be insisted upon as a necessary qualification to practise surgery. Equally important is an adequate training in surgical pathology and bacteriology.

Another requisite for surgery is a good knowledge of general medicine. Thirty years ago it was the custom to insist upon a man conducting a general practice for at least five years before branching off into surgery as a specialty. Theoretically the suggestion is sound and, at the present time, one could cite examples of young men continuing in general practice, who along with their general practice, by hard conscientious work, have succeeded in acquiring an excellent training in surgery. There is no better product in general surgery to-day. There are certain requisites necessary in such a conjunction of surgery with general practice. The man must do continuous work in a surgical ward of a general hospital and must, over a long period of time, act as first assistant to a good surgeon.

Unfortunately the opportunity to act as assistant and to work, and possibly teach, in a surgical ward and laboratory, can only be obtained in a large city, preferably in a teaching centre. This therefore does not solve the problem for the training of surgeons for smaller communities. In some of our schools we have endeavoured to solve this problem. Briefly stated it consists of post-graduate instruction and experience extending over three years: One year as interne, in a rotating service in a general hospital; two years devoted to surgery, acting as first assistant and undertaking operations on his own responsibility, while at the same time carrying on work in the laboratories approved by the department of surgery. The rotating service, if the man takes full advantage of his opportunities, gives him, in an intensive fashion, something equivalent to the period of general practice which has been recommended. A knowledge of laboratory methods as applied in surgery is particularly valuable to one who is to be cast upon his own resources in a small community, and finally two years devoted wholly to surgery in the wards and laboratories of a general hospital will give him an opportunity to develop the necessary confidence and skill to carry on as a specialist. If the individual is proceeding to a higher degree in surgery at the university he will be required to pass examinations in anatomy, physiology, pathology and surgery.

We are told from time to time that bad surgery is done and unnecessary operations are undertaken. The general public will rectify eventually that state of affairs where it exists. The public will demand, at present they are demanding, a knowledge of the qualifications of anyone who undertakes to do surgery. In medical education, however, we should take the initiative, and anticipate the demand of the general public by providing the machinery by which the general surgeon may be trained to do this special work efficiently.

Medical Curriculum

I need not elaborate this theme of the training of specialists. I have spoken of general surgery, but other specialties must be dealt with along similar lines. Post-graduate instruction, suitable to each specialty, must be available in

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medicine, in obstetrics and gynæcology, in ophthalmology and oto-laryngology, etc. The time has gone by when a man on graduation is regarded as competent to practise as a specialist. He must be trained and machinery for that training must be provided.

Regarding the curriculum of study in the ordinary undergraduate course in medicine there is much to be said. Twenty years ago standardization and uniformity were the popular ideals. We must acknowledge that insistence upon the attainment of certain minimum standards resulted beneficially in eliminating the lower grade schools. But standardization has served its purpose, and the sooner we abandon any idea of uniformity the better for the future progress of medical education. There is a healthy reaction at present in favour of the cultivation of individuality in our medical schools. Healthy criticism is now levelled at rigidity in the curriculum, and the consensus of opinion is in favour of greater elasticity.

In this country we are not tied down by tradition; it is easier for us to introduce reforms than is the case in older countries. We are alert to the fact that methods which may have been essential for progress a quarter of a century ago have served their usefulness and should be considered obsolete to-day.

Take the position of the basic sciences of chemistry, physics, anatomy and physiology. These sciences were at one time closely linked with clinical subjects. Thus the Professor of Anatomy at the beginning of last century gave the lectures on surgery; and physiology, formally known as the "Institutes of Medicine," was taught in its direct application to clinical medicine. Then came an interregnum when anatomy and physiology were restricted to the sphere of pure science but as these subjects, because of advance in science in general, became more and more comprehensive and covered a larger and larger field, the demand was made that teaching in these subjects should be restricted, and should cover only the ground which had its direct application to the practice of medicine.

To-day the situation is changed. Scientific methods, with equipment consisting of instruments of precision, and laboratory investigations, have been introduced into the clinic; these methods are essential in modern scientific medicine. To attain the best results and to save time and effort, the preliminary teaching in the basic sciences should be restricted to their specific spheres, without any attempt at the clinical application.

It would appear that our progress in the medical curriculum, as in many other human activities, moves in cycles. It becomes apparent that we have arrived back at the stage of teaching these basic sciences as pure science; the object being to inculcate the scientific method, its application comes later. One would in fact advocate to-day the principles laid down by Billroth half a century ago. After deprecating the "premature development of medical routine" he says: "The degree of scientific training and interest imparted to the young man at the university determines his intellectual level for the rest of his life. It enables him to keep in touch with scientific development, and even though the breakers of practical life should for a time carry him away from the green shores of the promised land, he will be able, when the sea has subsided, to row himself back again, there to gather refreshment among the newly ripened fruits." Then again his remarks regarding the student in science are apposite: "Whatever he may learn incidentally of the physicians' technique through the study of these subjects is, in my opinion, merely a by-product obtainable with little effort." We can hardly improve upon these arguments advanced by Billroth, in stating our present day viewpoint.

The inordinate length of the curriculum of study is due mainly to two factors. First, the larger field which must be covered in the study of the basic sciences due to modern progress in science, and second, the much greater application of the scientific method in the treatment of disease. Hence the necessity for lengthening the time both in the primary and in the final years.

If these arguments are sound then, once more we may advocate the teaching of the basic sciences in water tight compartments without any attempt at clinical application. The basic sciences should be taught in such fashion that the student can apply the methods of physiology and anatomy, etc., at the bedside. As Billroth says, the application later is acquired "with little effort." The main thing is to see to it that the training in science is sound and adequate.

Our graduate of to-day has not only laid a sound foundation by his training in the basic sciences but having, early in his course, acquired the scientific method, he is able to apply the methods of scientific investigation at the bedside in the elucidations of the problems of disease. Furthermore, as he goes out into practice, he is capable of applying the advances of science in his daily routine of practice.

The product of our present day curriculum is a tremendous asset to the profession of medicine. An individual practitioner may not initiate any particular advance in the treatment of disease, but in virtue of his training in science, he has the necessary receptivity which permits him to understand, and to incorporate in his practice, the discoveries and advances made by others. Elsewhere I have illustrated the importance of this observation by referring to the experience of Lister, the centenary of whose birth we celebrate on April 5th. Lister was himself a trained chemist and biologist, and was able to utilize the discoveries of Pasteur in the enunciation of certain principles in surgical treatment which revolutionized the entire field. Lister's colleagues, leaders of the profession of his day, did not possess the necessary receptivity; their knowledge of scientific methods was meagre and inadequate, and they could not understand the language of Lister expressed in scientific parlance; so, as is often still the case where ignorance and, as is often still the case where ignorance prevails, they bitterly opposed his teaching with the result that the full fruition of his epoch-making discovery, was postponed for a quarter of a century. On the other hand witness the condition which obtains to-day; in the introduction of insulin, the profession, trained in science, immediately understood the significance of Banting's discovery; his findings were immediately checked up in the laboratories of scientific investigators elsewhere, and within a few months the entire medical profession was able to utilize, and did utilize insulin in the treatment of diabetes. This argument is sufficient in itself to justify the present system of the training of medical students both in the basic sciences and in their application at the bedside.

Medical Licensure

The possession of a degree in medicine from a Canadian university does not authorize a graduate to practise medicine in this country. He is required to obtain, by examination, a licence from one of the various licensing bodies. Each of the nine provinces possesses a Board legally qualified to grant such licences, and, in addition there is the Medical Council of Canada. This latter body was established in 1912, its purpose being to grant a qualification to practise medicine, acceptable for licence in every province of the Dominion. A candidate wishing to take the examinations of the medical council of Canada is required to present an "enabling certificate" from the Council of his province indicating that he has fulfilled the requirements which would entitle him to take the examination for licence in his respective province. Armed with this enabling certificate he is eligible to come up for the examination of the medical Council of Canada. Having passed these examinations "he is entitled to register without further examination, in any province."

The prestige of the medical council of Canada is increasing year by year. The last report showed that 1,772 persons were on the register, and of these no less than 275 were enrolled during the past year. The provinces of British Columbia and Saskatchewan have abrogated their right to hold examinations, and in lieu of these accept the examinations of the Medical Council of Canada. It would seem therefore the prospect is improving for the attainment of the desirable ideal of having one great central examining and licensing board for all Canada.

There are questions of grave importance which require consideration, and which must be satisfactorily disposed of before that ideal is ultimately attained. The rights of the various provinces must be conserved. Standards may vary in respective provinces. But, taking all these facts into consideration, we submit that the central body may function without disturbing the *status quo* in the various provinces. It must be remembered—in fact it is clearly obvious—that the duty of a licencing body is to fix the *minimum* standard which must be attained before a licence to practise is granted. This does not in any way interfere with the curriculum of study, or the standard set by any teaching body provided the minimum standard required by the central body is attained. In fact it may be assumed that individual schools will more than attain such a standard: they will go far beyond

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it, and different schools will probably exhibit great diversity in the manner in which they develop their own methods of teaching and their own standards of examination.

A student coming to the university for a course in medicine is not concerned with the requirements of the licensing body. He is attracted to the particular school by the training which is provided there; he may be influenced by other things such as economic considerations, convenience to his home, etc., but the requirements of a licensing Board do not influence him in his decision. The reputation of a particular school is founded upon a variety of factors, some of these are elusive when we attempt to define them. Obviously a sound training in medicine is essential if students are to be attracted; the personality, the attainments, and the teaching ability of individual members of the staff are often determining factors; as also are the adequate provision of clinical and laboratory facilities and the good name which the particular university as a whole has acquired for learning and its sound method of education. Perhaps the greatest asset which a university possesses, and the one which is chiefly responsible for enhancing its reputation, is the final product of its educational system. It is the reputation of our graduates which counts, not only in the success they attain in the practice of their profession but in their ability to advance the cause of medicine by investigation and research. Furthermore it is chiefly our younger men who exert this influence. They have had the advantage of a sound scientific training, much more thorough and practical, than their predecessors. Youth and enthusiasm, combined with ability and a good education, obviously constitute to-day the criteria which, in all the activities of life, ensure progress; and incidentally such graduates by their success maintain the reputation of the school from which they receive their degree and within whose walls some of them may still continue to work and teach. Woe betide the school which does not possess this asset of young, well trained, enthusiastic graduates; the future is largely in their hands to maintain the standards of education, and the reputation of their school.

These observations might seem inappropriate in a discussion on licensure but they have we believe a definite bearing. In the first place a "minimum standard" for licence is set purely for the protection of the public. It must be sufficiently high; the protection must be adequate; it must ensure that a man is fully qualified to practise his profession with safety to the public. Is it not possible that all provinces could agree on such a minimum standard? Having agreed on this, then the different schools would have individual freedom to evolve their own method of education, assuming of course that it covers (it will no doubt go beyond) the curriculum of study demanded by the minimum standard. Other than that no specific standards should be set, no uniformity, no rigidity of curriculum. Each school would be able to live up to its own ideals. The more individuality developed in our schools the better. Let each be responsible for its own development; let each, of its own initiative, fix whatever standards, whatever requirements, they may see fit. There may be great diversity of opinion regarding many details in the curriculum of study. The one thing in common among our Canadian schools is to produce graduates with high qualifications to serve humanity in the treatment of disease. This object may be attained by different avenues of approach. In our great country it is well to have diversity of opinion in educational matters, it keeps us out of the rut of complacency and self satisfaction, it stimulates healthy controversy and healthy competition. Far from creating divisions, if we approach these questions with an open mind, we cement our common heritage of Canadian citizenship by closer bonds, and we contribute our share of endeavour to foster a national spirit of unity among our Canadian people.

On the Importance of These Conferences

We have stressed the point that this conference is of value to the profession of medicine; let us go farther and emphasize the fact that it is perhaps of still greater value to the public at large. Meeting here under the patronage of the Federal Minister of Health; assembled, as we are, at the seat of Government in Ottawa, we represent the profession of the entire Dominion, and our sole object is to raise the standard of the service which we render to our fellow citizens. We hear a great deal about medical legislation nowadays, frequently it is asserted that such legislation is sought in the interests of, and for the protection of the pro-

fession. As a fact the chief, if not the sole, argument for placing a medical act, with all its provisions, upon the statute book is to protect the public, and to secure for the public the benefit of obtaining the most efficient treatment which is available in scientific medicine to-day. Thoroughly trained and fully qualified men, educated in our Canadian Universities, largely at the expense of the State, are legally authorized to practise medicine in Canada, and necessary legislation is provided to ensure that the services of these properly qualified individuals are available for the prevention and cure of disease among our people. Legislation is also enacted for the purpose of protecting our people against unqualified persons. The legally qualified practitioners of medicine in Canada are represented here to-day; we are here for the set purpose of increasing our efficiency as servants of the public; we are endeavouring by combined effort to secure the best service attainable for our people; we are endeavouring to improve our methods of education and to restrict the licence to practise to those thoroughly trained and properly qualified. In as far as we succeed in our endeavours we render an important public service to our country, and enhance its reputation among the nations for progressive thought and action, in a field of public service at once alluring and humane, the prevention of disease and the relief of suffering.

POINTS OF CONTACT BETWEEN THE DEPARTMENTS OF PUBLIC HEALTH, THE MEDICAL PROFESSION, AND THE PUBLIC

By J. A. Amyot, M.B., C.M.G.

Deputy Minister of Health, Ottawa

I DESIRE in my address to bring to your notice certain points of contact that develop out of the activities of the Federal Department of Health as well as some arising in connection with the Provincial and Municipal Health organizations and some out of the public's interest in public health. Necessarily the points cannot be considered exhaustively. Pointing them out I have considered to be sufficient, leaving the inference to yourselves who, I am sure, have given thought to them also.

Because of the difficulties in the way of public instruction by the administrative health authorities, voluntary health organizations have been developed by very active laymen. There is a great field for their work. They look to the medical profession for leadership in their movements. It should not be refused them. There was a time when the general practitioner reached practically the whole population. Much advice and instruction goes to the public now through these voluntary bodies, supplementing that of the highly developed governmental bodies. The object is the same: the prevention of disease, incapacity and misery. Should not our apparent aloofness be re-appraised?

Clinics

The profession has given its services always when necessary to the care of the needy, whether in the ordinary course of practice or in the organized clinic. You well know the limitations to this clinic service. It has been found necessary of late years to develop specially equipped diagnostic clinics, especially for the discovery of incipient disease. This movement has been to some extent a development out of the entry of the layman into the marching forces of preventive medicine. The layman still concedes the leadership to where it belongs. Except in the case of venereal diseases, the public health authorities have not interfered with the special treatment centres in this country. Many fraternal societies already attempt medical services. Some insurance companies do, and there are big corporations employing many men which go to the extent of treating even the families of their employees. Is this practice

going to continue growing? Many very influential bodies are advocating it, and there are some wanting to go one step farther and do as in Britain: establish the panel system.

Do We Want State Medicine?

The wealthy can now get hospital treatment, and facilities applied and exact knowledge brought to bear on their illnesses as never before in the world's history. The same is available for the poor, but what of that great body—the mid-financially placed? You know the causes of this situation as well as I. Can they be met?

Amendments to the Food and Drugs Act

During the past week, the third reading has taken place in the House of the bill containing the amendments proposed to the Food and Drugs Act. There are a number of amendments, but those that concern us of the medical profession are chiefly as follows:—

Section 1, Subsection 2 (c) of the Act of 1920 reads as follows: the term "drug" includes all medicine for internal or external use for man or animal.

This was deemed not to include those drugs that are for the mitigation or prevention of disease in man or animal, such as antiseptics, antivermin, antipests, sera or vaccines. Therefore, we proposed the following amendment:—

Section 1, Subsection 2 (c): the term "drug" includes medicine for internal or external use for man or animal; *and any substance or mixture of substances intended to be used for the treatment, mitigation or prevention of disease in man or animal.*

This enables the Department to deal with these substances in accordance with the principles of the Food and Drugs Act.

By Section 2, Subsection (3) and Subsections (a), (b), (c), (d), (e), (f) and Subsection 4, we hope to standardize the strength and control the sale of the following substances: strophanthus, digitalis, ergot and other vegetable preparations, pituitrin, thyroid, adrenalin and other powerful animal tissue preparations by biological tests; and also sera, viruses, toxins, vaccines and other analogous biological preparations by providing for the inspection of premises, equipment and technical qualifications of the staffs of manufacturers preparing these substances; also in the case of organic compounds of arsenic and other analogous drugs prepared for parenteral medication, by requiring that manufacturers submit test portions of each and every batch of such drugs to be tested in the laboratories of the Department of Health. We will require that only approved batches may be imported, sold, or offered for sale, in the case of organic compounds of arsenic and other analogous drugs prepared for parenteral medication.

These amendments read as follows:—

Section 4 of the said Act is amended by adding thereto the following subsections:—

"(3) Notwithstanding anything contained in subsections one and two of this section, the Governor in Council may make regulations respecting any or all of the drugs mentioned or described in Schedule B to this Act,—

(a) Prescribing standards of quality and potency;

(b) Defining official methods for biological testing;

(c) Providing for the licensing of manufacturers preparing drugs mentioned or described in Parts II and III of Schedule B.;

(d) Providing for the inspection of premises, equipment and technical qualifications of the staff of manufacturers preparing drugs mentioned or described in Parts II and III of Schedule B;

(e) Requiring that manufacturers of drugs mentioned or described in Part IV of Schedule B submit test portions of each and every batch of such drugs to be tested in the laboratories of the Department of Health, and requiring that only approved batches may be imported, sold or offered for sale;

(f) Prescribing a tariff of fees for inspection, licensing and biological testing.

(4) Any drug mentioned or described in Schedule B to this Act shall be deemed to be adulterated if it has not been manufactured, tested and labelled in accordance with regulations made by the Governor in Council under this section, or if it differs in quality or potency from the standard for such drug established by such regulations."

Opium and Narcotic Drug Act

The world has considered narcotism so serious an evil that some 75 nations, members of the Hague Convention, the treaties after the late war, the League of Nations and the Convention of Geneva of 1925, have finally banded themselves together to combat it. Canada has been marching with this movement.

The conventions of the Hague and of Geneva have laid down the principles on which the evil can be fought with a hope of success. Now and then opposition is raised against the enforcement of the law. Naturally those in charge of the execution of the law hesitate at times and give thought. Is it worth while? Is all this effort called for by mere fanaticism? Is the evil as great as we think it?

Perhaps as good a way as any to make an appraisement of what an evil it is, is to compare it with alcoholism. The alcoholic will get drunk once a day, once a week, or once a month. Mentally he is incapacitated whilst drunk. Would you give him your business or trust him with your life or that of the dear ones of your family when in that state? The narcotic addict is in that state 24 hours a day and 365 days a year. He is quieter, but is he more to be trusted; and where is the poor addict to end when his relatives and friends have thrown him out, as finally will happen? The underworld is his end in this world. We have perhaps eight thousand of these addicts in Canada. Realizing thus the evil, there seems every justification for the law. Addicts by treatment may be placed in a position in which they can rid themselves of the evil habit. It is for the psychiatrist or the grace of God to make them realize the pit in which they are and make them resolve to extricate themselves. It is the general opinion of the profession that what is known as "ambulatory treatment" is a myth. The patient must be under the strictest, skilled control during the medical treatment, whether one adopts the gradual or the short, sharp withdrawal of the drug of addiction; and more and more the short, sharp withdrawal is being considered the proper method.

The law takes into consideration these two methods, and does not consider that anyone is justified in supplying the drug for the continuance of the addiction, just to keep the addict at work or comfortable; in order that complete control may be had during the treatment, it also prescribes that the drug must not be given to the addict for self-administration. Where a patient is suffering from a disease other than addiction, or a disease in which addiction is a concomitant and part of the disease, the case is left entirely to the honest, good judgment of the physician. Practise legitimate medicine and you need not even think of the law. But it is no more legitimate to continue to allow an addict to obtain his narcotic than it is to continue giving diphtheria bacilli to a diphtheria patient. Every day of continuance is making the condition worse for the addict, when his final cure is his only hope in spite of his protests.

All of you know the difficulties of treatment, and how impossible it is to have the necessary control over the patient in his house. This is why it is generally considered that such patients must go to institutions, hospitals, etc. Why should not hospitals treat these cases as they do tuberculosis and venereal diseases? The remedy would seem to be the establishment, under provincial control, of special institutions, psychiatric institutions for their treatment, where the addict could be held for treatment. The difficulty in hospitals is that very thing: they cannot be held. They should be held just as much as an insane patient is held. Do please take this question up with the authorities of your provinces. If all addicts were held there would be no more necessity for this part of the Criminal Code.

Canadian Patent Medicine Act

This Act is designed for the protection of the public. With the exception of the French Act, which requires a full statement of medicinal content, it probably goes farther than that of any other country. It goes without saying that the public has the right to choose and to self administer, within reason, any medicine. Certain people claim the right to invent and to make up certain medicines to be sold to the public. This is partly conceded under our Act, but in the case of any potent drug in the preparation, it must be made public. Under the old Patent Medicine Act, it was not necessary for the applicant for a registration to sell, to declare the medicinal composition. Under the present Act, this must be communicated; and, under this Act, if there are any drugs in the preparation named in the Schedule of the Act, then these potent drugs must be declared on the label with their dosage present, and this dosage is subject to modification on the judgment of the Advisory Board functioning under the Act. In this way we have an Act which is nearly as stringent as the French law, in that all potent drugs present must be declared with dosage. The less active and important drugs are not required to be named, nor are the compounding methods and materials declared. The maximum of protection in this way is given to the public, and a large measure of protection is given the patent medicine maker in the field of commerce.

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There are certain other striking and restricting limitations in the Act for the protection of the public, *i.e.*—

1. No patent medicine is allowed to contain cocaine for either internal or external use;

2. No patent medicine is allowed to contain opium or its derivatives for internal use;

3. No patent medicine is allowed to contain alcohol in greater quantity than 2½ per cent, unless it is so medicated that it cannot be used as a beverage;

4. All abortifacients are barred;

5. All preparations for the treatment of venereal disease and impotency are also barred;

6. No preparation is to be advertised as a cure, and all advertisements making exaggerated claims or statements are forbidden;

7. No registration is given to preparations requiring skilled supervision in their administration, *i.e.*, organotherapy; and

8. No registration is given for medicines designed for the treatment of diseases that, because of their gravity, necessitate early treatment, such as tuberculosis, cancer, diabetes, Bright's disease, etc.

From the above, you will see that the Act has teeth in it. We do not prosecute very much. We do not need to, as the registration may be annually reviewed and licenses are good for one year only.

An Address
ON
PROTEIN METABOLISM*

By Graham Lusk, M.A., D.Sc., Ph.D.

TWO lectures were recently delivered before the students of Biochemistry in McGill University in which the subject of protein metabolism was discussed by Professor Graham Lusk of Cornell University Medical College.

As an ardent disciple and esteemed friend of that eminent investigator, Carl von Voit, Professor Lusk's attention had early been directed to the problems in metabolism involved in the diabetic state, and researches begun by him in Germany were carried on with enthusiasm after his return to America.

In the beginning of his first address Professor Lusk referred to the fact that Minkowski had been the first investigator to show experimentally, that when the amounts of glucose and nitrogen in the urine were compared, they were found to be present in a constant ratio in dogs rendered diabetic either by removal of the pancreas or by injection of the drug phlorizin. The ratio between these two substances, dextrose and nitrogen, more simply termed D/N ratios, became of particular significance, when the animal under observation had his diet restricted to lean meat. Carbohydrates fed to the diabetic animal are of course excreted as sugar in the urine, and if the animal be a completely diabetic one, all the carbohydrate thus fed will find its way into the urine. Under such carbohydrate feeding the D/N ratio could yield no information regarding the protein metabolism as reflected in the nitrogen excretion. If, however, the diet consist wholly of protein, the nitrogen of the urine would then necessarily indicate the amount of protein that had been metabolized in the period during which the urine had been collected. Any amount of sugar in the same sample could only have come from the protein that yielded the nitrogen, if it be admitted that such a completely diabetic animal burns none of the sugar derived from the protein. The D/N ratio obtained by Minkowski was 2.8, but later on Professor Lusk established the maximum ratio as 3.6, corresponding to the formation of 60 grammes of carbohydrate from 100 grammes of protein.

In discussing the subject of metabolism in general nutrition and during exercise, a subject to which Professor Lusk has contributed extensively, he referred at the outset to the pioneers whose classical contributions furnished the point of departure for much of the work that has recently added to and greatly increased our knowledge of protein metabolism.

* In brief abstract only: the Editor desires to express his indebtedness to Dr. Sydney Bliss of the Department of Biochemistry, McGill University for all the material of this abstract.

Fick and Wislicenus had early shown that muscular exercise was not accomplished at the expense of any increased consumption of protein. Partly because of their novel nature, but because also of their conclusive evidence, the experiments of these investigators have long been cited as proof of the fact that excessive muscular exercise exerts no measurable effect upon the metabolism of protein in the body. Urine collected at intervals during the ascent of the Faulhorn showed no demonstrable increase in nitrogen elimination, nor is it possible that the energy required to raise their bodies to the heighth of 1956 metres could be obtained from the amount of protein that was metabolized during the climb. What, asked the speaker then, is the source of the energy liberated in muscular contraction? For this we must turn to the work of the English investigators Fletcher and Hopkins, and Hill, and also to the work of Meyerhof in Germany. These investigators focussed attention upon the relationship between glycogen and lactic acid in contracting muscle. Bringing to physiology the exceptional skill shown in measurements of heat produced by minute isolated strips of muscle, Hill showed that the initial heat developed in the contraction of a muscle is quite independent of the supply of atmospheric oxygen, though the oxidations involved in the return to its original condition are certainly so dependent. Both Hill and Meyerhof held the view that the mechanism of contraction is associated with a sudden liberation of energy from the anerobic cleavage of glycogen into lactic acid; the subsequent oxidation of a fifth part of the lactic acid produced supplies the energy necessary to return the remainder of the lactic acid formed into the state of glycogen once more. Attention was also called by Professor Lusk to the following facts. Fasting dogs and phlorizinized dogs lose their liver glycogen very readily, but the stores in muscles are almost unaffected, and it is known that a certain small amount of carbohydrate comes from the protein metabolized. Until there is convincing evidence that fat is converted into carbohydrate, it would appear that the metabolism of such fasting dogs is maintained almost wholly at the expense of fat. The amount of sugar in the blood (there is no more than 0.5 grammes of glucose in the blood of a dog weighing 10 kilogrammes), and the glycogen contained in muscle are both maintained by the carbohydrate yielded in the protein metabolized at the time. With a non-protein respiratory quotient of 0.713 it is calculated that 3 per cent of the total energy is derived from protein, and 97 per cent from the oxidation of fat. Professor Lusk, however, strongly emphasized his conviction that up to the present not one iota of evidence has appeared to show any conversion of fat into sugar in the animal body.

In drawing attention to the application of these findings to human welfare he showed numerous lantern slides, summarizing the results of tests with workmen to determine the optimum conditions for manual labour as determined by Atzler in Professor Rubner's Berlin laboratory. Among those shown were sketches illustrating the results obtained in the lifting of weights from one height to another, the turning of cranks, the pulling and pushing of weights, and the effect on the energy expended in each as varied by the different postures assumed by the workmen. It was Professor Lusk's hope that employers of labour and managers of large productive factories on this continent would become interested in the application of these results to the wellbeing of their workmen. Among the many conclusions arrived at by Atzler in his investigations was his belief that at 40 years the male industrial worker reached his maximum of power, while for women the corresponding maximum was at 35 years. A decline in efficiency for both sexes was noted as occurring after these ages.

The second lecture of Professor Lusk dealt with *Intermediary Metabolism*, and was of a more technical character. The lecturer began by stating that in the perplexing half lights of our fragmentary knowledge it was difficult to unravel the conflicting views that have been advanced in the attempt to understand the intermediate products of metabolism formed when glucose is converted into its final end products—carbon dioxide and water. In 1921 in one of his articles Meyerhof expressed himself as follows: In the intact muscle three molecules of lactic acid are restored at the same time that one molecule of lactic acid is being oxidized. Since that time the trend of opinion has found expression in a passage from Handowsky (of Sir Gowland Hopkins' labora-

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tory) to the effect that the conditions of lactic acid oxidation are still undefined, although of great significance for an understanding of the physiology of muscular action. In enunciating the growing belief that we are further away from a correct estimation of the rôle of lactic acid in muscular contraction than seemed probable a few years ago, Professor Lusk stated that the facts at present pointed to the conclusion that lactic acid is a special product of anærobic metabolism, and that one must look to another intermediate substance as the source of the energy so abundantly furnished when carbohydrate is oxidized. If it is true that increased oxidation of glucose may occur without showing any increase in the lactic acid content of the blood, although the result of the anærobic production of lactic acid from glycogen causes a great increase in lactic acid even in the diabetic who oxidizes no sugar, the question of the oxidation of lactic acid in the body becomes of increased import. What significance, he asked, are we to ascribe to the finding that a mixture of muscle pulp with pancreas pulp, as well as the united extracts of these two tissues will form methylglyoxyl from hexose diphosphate, but not from nitrogen or glucose? Perhaps it is safe to say that the oxidative metabolism of carbohydrate passes through the methylglyoxyl stage, but to allocate the exact position of this substance or of any other of a number of possible substances such as pyruvic acid and acetic acid in the chemical kinetics of muscular contraction requires more evidence than we at present have; evidence which can be ascertained only be traversing the rough and hilly field of the study of metabolism. Professor Lusk who knows this field so well was obviously sincere in recommending it to the students for its "fine views" and for the pleasure and satisfaction that comes in wholehearted devotion to it. The visit of Professor Lusk will linger long in the memories of those who heard him, not only for the interest excited by his lectures, but for the generosity and enthusiasm with which he met the students in conversation both before and after his lectures.

DIPHTHERIA TOXOID AS AN IMMUNIZING AGENT*

By J. G. FitzGerald, M.D., LL.D.

Director, School of Hygiene and Connaught Laboratories, University of Toronto

BEFORE discussing specifically the use of diphtheria toxoid as a means whereby prolonged immunity to diphtheria may be secured, it is proposed to discuss very briefly certain aspects of the question of antigens in general. Antigens are those substances which upon injection into the human or animal body stimulate antibody formation. Their precise chemical nature is both obscure and a matter at present in dispute. Nearly all of those who have investigated antigens are agreed that they are:—

1. Large colloidal molecules, usually proteins, and "foreign" to the animal species in which they are to stimulate antibody production, in other words, heterologous proteins.

2. They must be soluble and must as a rule be "complete" proteins. Incomplete proteins, deficient in aromatic amino acids, such as gelatin, are not antigenic. On the other hand, incomplete proteins, such as zein, lacking the amino acids, lysine and tryptophane, but possessing tyrosine, are antigenic.

3. Proteins coagulated irreversibly by heat or alcohol are not usually antigenic. (Casein, however, if heated but still soluble, is antigenic).

4. Proteins, if converted into soluble acid metaproteins are antigenic. If converted into alkaline metaproteins, they are non-antigenic.

5. After complete hydrolysis, proteins are no longer antigenic even though all the products of hydrolysis are employed.

6. Carbohydrates of the polysaccharide type are, alone, incapable of stimulating antibody formation (with the possible exception of a glucoside extracted from Amanita phalloides and studied by Ford), but combined with protein they confer a high degree of specificity upon the antigen of which they constitute a part.

7. The antigen in solution must penetrate beyond the epithelial surface before it can stimulate antibody formation.

There is a very considerable difference of opinion as to whether lipoids may act as antigens. Wells[1] (1924) in discussing the question

* Read at the twelfth annual meeting of the American College of Physicians, Cleveland, February 21, 1927.

concludes: "In view of all the foregoing contradictions and difficulties it seems justifiable to say at this time that the capacity of fats and lipoids to serve as true antigens, capable of inciting the production of specific antibodies when injected into animals, has not yet been established." To this view I subscribe. On the other hand, Fairley[2] (1927) has just brought forward evidence which he believes establishes the fact that "alcohol-soluble cereal extracts function as true antigens." Since there is thus far no reason to believe that the antigens which have been employed to stimulate diphtheria antitoxin production are dependent upon their lipoid content either for their antigenic capacity or their specificity, the question need not be further considered here.

That diphtheria bacilli elaborate a potent poison when grown in artificial media was first shown by Roux and Yersin.[3] Fraenkel[4] and von Behring[5] in 1890 actively immunized guinea pigs against this poison or toxin. These contributions constitute the experimental basis for vaccination against diphtheria as well as for the production of diphtheria antitoxin. Many years elapsed, however, before it was proposed that human beings might be actively immunized or vaccinated against diphtheria, using diphtheria toxin for the purpose. It appears that Dziergowsky[6] was the first to attempt this and he carried out experiments on himself. He repeatedly injected himself with increasing doses of diluted toxin and stimulated antitoxin production. There were no evident ill-effects in consequence. For obvious reasons, unmodified diphtheria toxin was not introduced as an immunizing agent suitable for human use.

In 1907, Theobald Smith suggested that toxin-antitoxin mixtures might be employed for vaccination against diphtheria. The proposal was based upon the results obtained employing exactly neutral mixtures of diphtheria toxin and antitoxin in guinea pigs. Von Behring in 1913 first introduced toxin-antitoxin mixtures for human use. Since 1913, Park and his collaborators in New York have, by their combined clinical and laboratory studies, and through large scale employment of such mixtures, led in the campaign for the control of diphtheria through specific prevention.

In the meantime the search for a more satisfactory immunizing or vaccinating substance had been continued. In 1898, Salkowski and in 1904, Loewenstein described the action of formalin on soluble toxins. In 1921, Glenny and Sudmerson and in 1923, Glenny, Allen and Hopkins[7] proposed that formalinized toxin be used in human immunization against diphtheria. This toxin to which the name toxoid was given was slightly toxic. Finally in 1923 and 1924, Ramon[8] of the Pasteur Institute in Paris introduced the term anatoxine to describe diphtheria toxin which as a result of the action of formalin and heat has completely lost its toxicity but has retained its flocculating power and its antigenic action. Too great credit cannot be given Ramon in recognition of the importance of his observations. He also introduced a flocculation test, the value of which is very considerable. Ramon insisted at the outset, and has always maintained since, that anatoxine differed from any modified toxin previously described in being atoxic, while retaining antigenic and flocculating properties. This opinion I and my colleagues in the Connaught Laboratories also hold.

Just recently (January, 1927) Ramon[9] and his collaborators have shown that tetanus anatoxine can be prepared by growing tetanus bacilli in a medium containing beef bile. In a preliminary communication dealing with this aspect of the subject Ramon and his co-workers state "the tetanus bacillus can be grown satisfactorily in bile bouillon; if sufficient bile is added it is possible to obtain some sort of spontaneous transformation of the toxin into a product which possesses the fundamental properties of anatoxine, namely: is innocuous, has flocculating power, antigenic value and stability."* As to whether tetanus toxoid thus prepared could be employed in human vaccination remains to be ascertained.

The methods employed in the Connaught Laboratories for the production and standardization of toxoid have recently been described in detail by my colleague P. J. Moloney.[10] In an earlier communication, Moloney and Weld[11] dealt at length with some of the more theoretical questions with which Ramon dealt in his series of publications. It was suggested that

* Le Bacille tétanique cultive parfaitement bien en bouillon bilié; en ajoutant suffisament de bile, il est possible d'obtenir la transformation en quelque spontaneé de la toxine en un produit que possède les propriétés fondamentales—innocuité, pouvoir floculant et valeur antigène, stabilité—des anatoxines.

the flocculation test might be employed as a satisfactory substitute for the Ehrlich procedure in the assay of antitoxic values. Moloney and Weld observe on this point: "The Ramon test cannot be used as a measure of antitoxin as defined in Ehrlich units. It may be used as a rough guide to animal testing." Since, at the present time, the consensus of opinion favours the view that toxin neutralizing power is a measure of therapeutic efficacy and presumably also of protective power, Ramon's in-vitro test cannot be substituted for the in-vivo method of Ehrlich.

Moloney and Weld, too, do not believe on the basis of their work, that the indicating tube in the Ramon test always represents a balanced mixture, or that flocculating power is a measure of antigenic value. They do agree, however, that "the flocculation test can be used to determine whether or not a toxoid possesses any immunizing value and that it is of value as a guide in the preparation of toxoids."

It may be desirable at this point to refer to certain disadvantages which appear to be inherent in the various toxin-antitoxin mixtures heretofore chiefly employed in the prevention of diphtheria. There have been at least three different mixtures fairly generally used in the United States and, to a limited extent, in Canada. These are the so-called "$3L_+$"; "$1L_+$" and "1/10 L." mixtures. In the preparation of all of these the essential criterion of their suitability for the production of immunity in adults or children was a specified toxicity; that is, their capacity to induce paralyses or cause death in guinea pigs when injected in certain quantities. Their antitoxin producing capacity, while sometimes determined, was not ascertained as a routine procedure. In other words, the value of various preparations was not based upon preliminary laboratory studies of the antigenic value of each and every toxin-antitoxin mixture employed. The results of the widespread use of these mixtures in schools, institutions, etc., indicated, however, that thousands of persons became Schick negative and presumably immune after receiving two or three doses. Some years ago (1923) Glenny, Allen and Hopkins[7] introduced a simple method of testing the antigenic value of toxin-antitoxin mixtures, which has proven very useful in ascertaining antigenic values or what Glenny has termed the immunity index. The method consists in injecting guinea pigs with a dose of the preparation being investigated, allowing the animal to rest for several weeks (3 or 4) and then doing Schick tests on these animals at weekly intervals. Moloney has modified this procedure and in the Connaught Laboratories "the toxin undergoing modification is tested for toxicity at weekly intervals. These preliminary tests are carried out by injecting intradermally 0.1 c.c. of the undiluted toxin and 0.1 c.c. of a 1/5 and 1/25 dilution into the skin of a guinea pig. Detoxification is considered complete when the 1/5 and 1/25 dilutions show a reaction of 5 mm. or less and the undiluted material a reaction of 12 mm. or less."

"The potency of the product is determined by injecting subcutaneously 0.5 c.c. amounts into each of five guinea pigs (300 to 320 grms. in weight). At the end of a month these animals are Schick tested and in the subsequent week they are again Schick tested. Immediately following the reading of the second Schick test 5 M.L.D's of diphtheria toxin are injected into each animal. At least four of these animals must survive. The results of the Schick tests give preliminary evidence regarding the immunizing value of the toxoid." Thus precise information is available indicating that the preparation of toxoid readily stimulates antitoxin production in experimental animals and also is quite innocuous before it is employed in the vaccination of persons against diphtheria. This appears to us to mark a very definite advance in standardization and control.

In the preparation of toxoid in the Connaught Laboratories, a toxin containing not less than 400 M.L.D's per c.c. is used. Formalin is added to a concentration of 0.3 per cent. The mixture is heated at 37° C. for from 1 to 4 weeks until detoxification is complete. Moloney has shown that the rate of detoxification is much more rapid at a pH of 8.5 than at a pH of 7.0. In a general way it may be said that the more alkaline the medium, the more rapid will be the rate of detoxification. The essential values then with which we are concerned are: (1) antigenic power, (2) absence of toxicity, (3) flocculating power, and (4) stability. It is unnecessary to ascertain L_+ or L_0 values and the elaborate time-consuming and expensive procedures inherent in testing toxin-antitoxin mixtures are eliminated. It should be noted that the anti-

toxin producing capacity of any preparation of toxoid is provisionally as well as finally noted, the former on the basis of toxin-neutralizing power in the skin and the latter on the basis of protection against five lethal doses of toxin. Furthermore these methods are simple, inexpensive, require but little time and in the hands of my colleagues have been easy of interpretation, which is a matter of prime importance in any method of assay of a biological nature. Experience during the past two years in our laboratories has convinced us that in the great majority of instances successive preparations of toxoid have a high degree of uniformity, if certain elementary precautions are taken to ensure constant conditions in respect of those factors of which we have some knowledge, such as original toxicity, concentration of formalin, absence of phenol, period of heating, etc.

Another aspect of the question of antigens in general and of diphtheria toxoid in particular, which has very considerable interest, is that relating to purification or concentration. Diphtheria toxoid essentially consists of water, extractives of meat (protein and protein split-products, inorganic salts, etc.), diphtheria bacillary protein and the specific poison or toxin. How much of this admixture is extraneous and how much is essentially antigenic? Watson and Wallace,[12] Glenny, Hopkins and Pope,[13] Moloney and Weld[11] and others have endeavoured to answer this question. The Watson and Wallace procedure for purification consisted in chilling toxoid to a temperature of 5° C. and adding glacial acetic acid sufficient in amount to give a heavy precipitate (about 2.5 per cent). When coagulation was complete the material was centrifugalized and the precipitate which contained the antigen was suspended in cooled distilled water, and solution was brought about by the addition of cold sodium hydroxide. The pH of this was not allowed to become more alkaline than 8.4. The purified and concentrated material was suitably diluted with physiological salt solution. Moloney and Weld in their modification substituted sodium bicarbonate solution for sodium hydroxide to dissolve the precipitate. This was advantageous because there was thus no danger of the mixture becoming too alkaline since the pH of concentrated sodium bicarbonate solution is approximately 8.2. A further step in purification was developed by Moloney who suggested the addition of alcohol up to 85 per cent concentration to the sodium bicarbonate solution. The antigen is in the dissolved precipitate. The degree of purification will be understood by reference to the following data on the nitrogen content:—

100 c.c. of original unpurified toxoid contained 260 milligrams of nitrogen.

100 c.c. of toxoid purified by the Watson and Wallace procedure contained 0.25 milligrams of nitrogen.

100 c.c. of toxoid purified by the Moloney method contained 0.20 milligrams of nitrogen.

It has been observed, however, that these purified toxoids are very much less stable than the unconcentrated material. Furthermore, O'Brien observed that the purified Watson and Wallace material still gave rise to reactions in sensitive individuals and Moloney noted that his purified toxoid also occasioned reactions in such persons. It would appear, then, that the injection of material containing even very minute quantities of nitrogen produced local or general reactions in those who have what is perhaps a non-specific sensitization to foreign proteins. Such reactions occurred especially in older children and adults. The elimination of the protein moiety in the antigen (which may be described as the "reacting" substance) rendered the purified material non-antigenic. It must be admitted that the search for an ideal immunizing agent against diphtheria may have to be prosecuted for a very much longer time in the light of these observations.

It having been established that toxoid quickly stimulated the appearance of antitoxin in rabbits and guinea pigs, careful quantitative assays of the response in persons whose normal antitoxin content was known were undertaken. We are still greatly in need of further information as to how so-called natural immunity to diphtheria is acquired. It seems likely, however, that many persons develop their protection as a result of contact with those harboring diphtheria bacilli, from whom they receive, in a haphazard fashion, what Dudley has described as a sub-infective dose of the micro-organisms. Dudley has shown too that in a so-called diphtherial environment there is, after a short period, a definite increase in the number of immune individuals and a corresponding reduction in the number of susceptibles. This is one of the few observations bearing upon the mechanism of acquired diphtheria immunity in man which

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seems to be significant. It has also been suggested by several investigators that so-called "peudo-positive" Schick reactors (that is persons sensitive to diphtheria bacillary or other protein in the toxoid) may possibly respond more readily to injections of diphtheria antigen than do non-sensitive persons.

Another question of fundamental importance is this: are there fluctuations from time to time in the status of individuals in respect of their immunity or susceptibility to diphtheria? I have had repeated careful quantitative assays made of the diphtheria antitoxin of the blood of myself and of a small group of my associates during the past three years. There is no evidence as yet to show that either those with a considerable quantity or those with practically no demonstrable natural antitoxin show variation in content from year to year, under what might be described as ordinary conditions of urban existence. Those comprising this group had not been actively immunized to diphtheria. Until it is possible to follow closely a group of children from infancy onward to the time when those among them who were originally susceptible acquire immunity it seems improbable that any further information upon this question will be obtained. Such a group if kept under observation in an institution, where repeated assays of antitoxin could be made and careful examination undertaken at intervals to ascertain whether diphtheria bacilli were present at any time on the nasal or pharyngeal mucosa, might easily furnish the information which we lack at present.

Our early studies of the action of toxoid in stimulating antitoxin production in human beings were made upon a small group of persons in the Connaught Laboratories. Both Schick tests and quantitative assays of the antitoxic response were made and it was found that very pronounced increases in content quickly followed the administration of toxoid. Individuals who were Schick positive and were given doses of 0.25 c.c. and 0.5 c.c. of toxoid respectively developed from 0.1 to 1 unit of antitoxin per c.c. of blood within two and a half months. One of my colleagues showed an increase in antitoxin content from less than 0.01 to 10 units per c.c. of blood within 3 months. No one in the first group given toxoid by us failed to develop immunity. On the basis of these preliminary results, arrangements were made for a more extended trial of toxoid among persons living in institutions who could be investigated some time after they had received the material so that its capacity to induce an immunity as well as the persistence (at least for a time) of this immunity could be determined. Again promising results were obtained and in September, 1925, the distribution of diphtheria toxin-antitoxin was discontinued and toxoid was substituted. In the autumn of 1925 in the Essex Border Municipalities, (Windsor, Walkerville, Riverside, Ford City, Sandwich and Ojibway), about 7,000 pre-school and school-age children were given two doses of toxoid by the Local Board of Health and about 2,000 other children were immunized by physicians in private practice, making 9,000 in all who were given two doses; in addition 1,600 others received only one dose. During October, November and December, 1926, in the same communities, 3,000 additional children were given two injections of toxoid. Dr. Adams, the Medical Officer of Health of the Essex Border Municipalities, (to whom I am indebted for the above and certain additional data) has intimated that perhaps 2 to 3 per cent of the children had fairly marked reactions and about 25 per cent some slight local reaction.

Toxoid was administered to many thousands of school children in the Province of Saskatchewan during the year 1925-26, under the direction of Dr. M. M. Seymour, Deputy Minister of Health for Saskatchewan. During the period, July 1, 1926, to February 1, 1927, between 100,000 and 120,000 persons, resident in the 9 Canadian provinces have received diphtheria toxoid.

Two or three other points must be referred to briefly. Attention has already been called to the fact that certain individuals develop local or general reactions after receiving toxoid. Zoeller and my associate P. J. Moloney have shown that these persons may be detected by means of a very simple procedure. Dr. Moloney's method of testing for marked toxoid reactors is as follows: "Inject intradermally 0.1 c.c. of a 1/20 dilution of toxoid. If a reaction at the site of injection develops within 3 days which measures more than one-half an inch in diameter it is recommended that diphtheria toxoid be not given." It has been found by experience that very few children under six years of age have

severe reactions after receiving toxoid and that marked reactions in children under 8 are quite uncommon. Therefore it is strongly recommended that children be vaccinated in early childhood, preferably in the first six years of life for the reasons that they are then in the age period when they most need it (when diphtheria morbidity and mortality are highest) and when reactions following vaccination with toxoid are least likely to occur. Older children or adults may also be given toxoid if they are not reactors, and if it is deemed necessary. The doses of toxoid at present recommended by us, are 0.5 and 1.0 c.c., respectively, given at an interval of one month. This suggestion as to dosage is based upon preliminary experimental data. If later results indicate that more than two doses are desirable, a change to three doses will be made.

We have evidence which shows that more than 70 per cent of those given two doses of toxoid have developed immunity in less than 3 months. How durable this will prove to be we do not know as yet. There is no reason why active immunity resulting from the administration of toxoid should be more transient than that which results from the injection of unmodified toxin or of toxin-antitoxin mixtures. In any case, the persistence or disappearance of protection conferred by toxoid can be readily ascertained by means of the Schick test or by quantitative assay of antitoxin content.

In conclusion, may I repeat that diphtheria toxoid appears to us to be preferable to toxin-antitoxin as an immunizing agent. Equally important, however, in our judgment is the desirability of encouraging vaccination against diphtheria during the first 6 or 8 years of life rather than later.

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Effects of Polarized Light on Vital Processes—A new and hitherto unsuspected influence of the quality of light upon vital processes was announced to the American Chemical Society in session at Richmond, Va., recently, by Dr. David I. Macht, of the Johns Hopkins University. It is well known that a difference in the wave length of light, that is, the frequency of vibration, makes a marked difference in its action on plants and animals; that, for instance, rickets may be cured by light of high frequency, such as the ultra-violet rays. Now Dr. Macht has found that the direction of the vibrations also makes a difference in its effects. If the vibrations all lie in the same plane, like a wavy line on a sheet of paper, the action is different to that when the vibrations occur in all directions promiscuously as in ordinary light. This peculiar form of light is called "polarized" because the vibrations have a single direction. But it can not be distinguished by the eye from ordinary light. An Englishwoman, Miss Elizabeth Semmens, reported in 1923 that polarized light would promote the conversion of starch into sugar. Dr. Macht has confirmed this and has gone much farther. Rays of polarized light are found by him to stimulate the growth of yeast and bacteria. Certain drugs, such as digitalis, cocaine and quinine, lose in their medicinal power on exposure to polarized light. Still more interesting is the discovery that polarized light causes sick and poisoned rats to succumb more quickly. Injections of santonin or cocaine caused rats exposed to polarized light to be seized with convulsions, and usually die, sooner than those similarly dosed but living in common light.—*Science Supplement*, April 15, 1927.

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DIGITALIS

Its Source, Preparations and Employment in Medicine

By V. E. Henderson, M.A., M.B., and M. I. Sparks, B.A., M.B.

Department of Pharmacology, University of Toronto

SINCE the time of Withering (1775) digitalis has had a recognized place in medicine, but the studies of Cushny and Sir James Mackenzie initiated a new period in its therapeutic employment. It is now recognized as the sovereign palliative in auricular fibrillation, but its employment in other cardiac conditions is still in dispute. We have learned also, much in regard to its chemistry and in the use of its preparations. This article attempts to present for clinical use some of this knowledge.

Digitalis has been used with some success in a number of types of cases of myocardial decompensation, but it stands out pre-eminently as the drug of choice in cases of auricular fibrillation. A more exact knowledge of the pathological physiology of auricular fibrillation and the clinical features of value in its diagnosis are essential to its treatment, if consistently good results are to be obtained.

The work of Thomas Lewis has shown that in auricular fibrillation the impulse leading to contraction does not arise at its normal site of production, the "sinus node," but elsewhere in the auricular muscle itself; the impulse travels in the form of a wave passing over an irregular circular path around the mouths of the great veins, thus making a so-called "circus movement." The wave circulates at the rate of 400 times or more per minute. This high frequency of impulse production produces irregularity of conduction and hence a constantly varying path; further, the impulse reaches the auriculo-ventricular node at irregular intervals. The auriculo-ventricular node and bundle cannot transmit at a rate of 400 per minute, so accepts only those stimuli which reach it while it is in the responsive state. Thus the ventricle is stimulated to contraction at irregular intervals and contracts with unequal force owing in part to unequal filling. This produces the clinical conditions observed in auricular fibrillation.

The pulse is usually quite fast, 100-170 beats per minute, but the unique characteristic which suggests fibrillation is its complete irregularity; irregular as to rhythm, (the time between each pulse wave differing from beat to beat) and irregular in the force of the successive beats. This latter irregularity in force can readily be picked up when auscultating with a sphygmomanometer for the blood pressure. The more irregular and tumultuous the pulse, the more sure is the diagnosis of auricular fibrillation. Palpation and auscultation at the apex show the same characteristics of the cardiac movements, but frequently the rate at the apex is faster than in the radial artery. This "pulse deficit" is due to some of the ventricular contractions not being strong enough to produce palpable waves.

As mentioned above, the ventricular rate is fast, but the actual rate at which the ventricle beats is dependent on the integrity of the auriculo-ventricular node and the conducting bundles. If these are intact, the ventricle may beat at rates as high as 200 per minute; if seriously impaired, at a rate of 80 or less, or complete heart block may supervene.

Thus an irregular pulse suggests auricular fibrillation; the greater the irregularity and the faster the pulse the more certain the diagnosis becomes, while if on moderate exercise, the pulse rate accelerates and becomes more irregular and the pulse deficit increases the diagnosis approaches certainty. A slow pulse in auricular fibrillation indicating damage to the auriculo-ventricular conducting system, is of grave prognosis, and in these cases digitalis exerts little beneficial effect. Congestion of the liver, œdema, decreased urine production, and dyspnœa depend on lessened cardiac output to a large extent due to the rapidity of the cardiac action and its irregularity.

The beneficial result of the exhibition of

digitalis in this condition depends on its selective action on the auriculo-ventricular bundle, the conductivity of which it reduces. With the rate of conduction decreased, it can transmit fewer impulses per unit of time; the auriculo-ventricular node is being bombarded with impulses, but it can now transmit only those arriving at such intervals as correspond with the lowered conductivity induced by the digitalis. Therefore the rate of the ventricle is decreased and the force of the contractions becomes more regular and greater. The decrease in ventricular rate has two further results, an apparent decrease in the irregularity (though some is still present), and an improvement in the cardiac output per beat as the increased length of diastole allows better diastolic filling. The net result of these changes then, is a decreased ventricular rate, beats of more regularity as to time and force, a better cardiac output per beat and therefore an improved circulatory condition. This leads to the following improvements in the patient's general condition, if previously deficient: decrease of dyspnœa, better pulse pressure, more regular blood pressure level, decrease of œdema and liver enlargement, diuresis, and a marked improvement of subjective symptoms.

The other important clinical actions of digitalis on the organism may briefly be mentioned here, as it is a proper understanding of these that elucidates the conditions forming the indications and contra-indications for digitalis therapy.

As mentioned above, digitalis decreases the conductivity of the auriculo-ventricular bundle in auricular fibrillation, most probably by action directly on the tissue of the bundle, but it also produces a similar result by stimulation of the vagus mechanism (directly on the medullary vagus centre, or on the vagus endings in the heart). This is the more probable mode of action of digitalis in reducing the rate of fast but regular hearts. The vagus stimulation results in slowing the action of the sinus node, the pace-maker in these fast regular hearts.

Acting directly on the cardiac muscle digitalis glucosides have several actions. The irritability of the muscle is increased so that the use of digitalis in otherwise regular acting hearts may produce an irregularity due to ventricular extra-systoles. Further, there is some evidence that digitalis increases the tonicity and contractility of the cardiac muscle when these are below normal, and these effects may conduce to the relief of cases of decompensation other than that due to auricular fibrillation.

The active principles of digitalis have an effect on the coronary blood vessels and flow in therapeutic doses only in so far as they affect the general cardiac efficiency. The same remarks apply to the rest of the blood vessels of the body. Thus digitalis raises blood pressure only where it has fallen below normal, and therefore high blood pressure forms no contra-indication to digitalis therapy.

The diuresis so prominent a result of the exhibition of digitalis is probably due neither to a direct action on the renal epithelium nor to a selective effect on the kidney blood vessels, but must be ascribed to the improvement in the general circulation subsequent to the renewed cardiac efficiency.

Other Indications for Digitalis Therapy.—In auricular fibrillation digitalis is only a palliative, although a very efficient one, but in the nearly related disease, auricular flutter, digitalis in a fair proportion of cases is curative. Diagnosis of this condition is difficult clinically and really requires electrocardiography. However, in a definitely diagnosed case, digitalis may be given if no toxic symptoms appear previously, until auricular fibrillation is produced. Then on cutting off the digitalis, the heart instead of reverting to a flutter, resumes its normal rhythm.

It seems fairly definitely established that simple fast cardiac rates, *i.e.*, without cardiac damage or disease are but slightly affected by digitalis even in full therapeutic doses. When the cardiac impulse arises normally in the sinus node, the reduction will not be more than 10 or 15 beats even in cases in which the rate is high, (150) as in fever. Indeed, in cases of fever the effect of digitalis is usually negligible save possibly in children. In cases of a fast cardiac rate accompanied by some myocardial decompensation digitalis may possibly be of some benefit, owing primarily to its action in increasing cardiac tonicity and contractility, though the rate is usually decreased but only slightly. There are cases in the literature where digitalis seems to have produced these effects,

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but that it will be effective in all such cases is contrary to clinical findings. While digitalis may be tried an expectation of consistent results is scarcely justified.

A better claim for the use of digitalis has perhaps been made in the case of pneumonia, but only when the digitalis medication is undertaken prior to the evidence of marked cardiac acceleration and cardiac failure. It is possible that in this case the beneficial effect is also due to the digitalis tending to maintain cardiac tonus and contractility, offsetting in this respect the effect of the fever and the toxins present, but clinical experience seems amply to have shown that used late in the disease when the abnormal conditions are established, no benefit may be expected from it.

Contra-indications. — Digitalis should not be used in cases where there is already some change which it would only tend to magnify. Thus if a heart is already showing extra-systole production, the exhibition of digitalis increasing the irritability of the heart, would only render this irregularity more pronounced.

Similarly if some heart block is present, digitalis will only accentuate the degree of block, or even change it into a complete heart block. Some degree of heart block may be present in diphtheria, and therefore the presence of this disease contra-indicates the use of digitalis.

Neither high blood pressure nor valvular disease of the heart are in themselves contra-indications to digitalis.

Signs of Intoxication.—Overdosage with digitalis is apt to produce unpleasant and in greater amount, dangerous results. Since the approach to this condition is heralded by definite signs, it is essential to be on the watch for and recognize these. In ordinary cases the pulse rate, as described above, is sufficient guide, but in a certain number toxic effects develop early, in which cases digitalis dosage must be decreased or discontinued. Anorexia followed by nausea, vomiting and occasionally diarrhœa are the most usual toxic symptoms. These have been ascribed to the irritant effect of some constituent of digitalis on the gastric and intestinal mucosa, but recent evidence adduced by Hatcher is to the effect that these symptoms are produced by reflex vagus activity from the sensory vagus endings in the heart, *i.e.*, a cardio-gastric reflex. It is possible that also digitalis may stimulate the vomiting centre in the medulla.

Extreme slowing of the heart (or heart block) indicates overdosage with digitalis, but before this effect occurs, other signs of intoxication will be present. Extra-systoles or pulsus bigeminus are the main ones occurring in the heart. Anorexia is very important, and must constantly be watched for. It is the earliest sign of approaching intoxication and will sometimes occur as long as two to three days before other signs. Anorexia is a definite indication for reduction of digitalis dosage. If this sign be neglected, nausea and vomiting or less often diarrhœa will result.

Modes of Exhibition. — Digitalis is usually given by mouth. It is absorbed slowly but fairly completely from the stomach and intestine. The main disadvantage of the oral route is the slowness with which beneficial results are obtained. To obviate this difficulty digitalis has been given both subcutaneously and intravenously but none of its preparations yield themselves to this type of exhibition and where very prompt results are desired strophanthin should be used intravenously. One method of administration which is not commonly employed, but which may be used to advantage, is a retention enema per rectum.

Dosage. — Oral administration of digitalis, therefore, should be employed in doses which should be governed by the following conditions. Digitalis while fairly rapidly absorbed into the system is very slowly excreted, on a rough approximation only the equivalent of about 20 minims of the tincture per day. Therefore, when given in larger quantities than this, accumulation will occur. When digitalis is first given, this cumulative action is of distinct advantage, for digitalis does not produce its full therapeutic effect until the body has been saturated to a certain level, the level which we may call that of therapeutic saturation. Therapeutic saturation requires from 5 to 7 drachms of the tincture in the body, again a rough approximation.

The index of saturation in fibrillation is primarily the pulse rate. As the quantity of digitalis in the body increases, the heart rate progressively decreases, and an arbitrary point indicating therapeutic saturation is chosen at

about 90 beats per minute. Once this point has been reached we may say that the optimum effect of digitalis will be present, further digitalis medication being given only in sufficient quantity to maintain this level of saturation, *i.e.*, roughly 20 minims per day. It must be emphasized that the heart rate determines the amount of digitalis required, and the dose should be so regulated as to maintain it at or about 90 beats per minute. If toxic symptoms arise, the dose must of course be decreased, or in more severe cases digitalis treatment intermitted altogether.

With these general considerations in mind the following may be given as a general method of therapy. For cases of severe myocardial decompensation where prompt results are required, the first dose may be as high as 4 drachms of the B.P. tincture, followed by drachm doses 2 or 3 times a day till about 8 drachms are given, when therapeutic saturation will be approached and consequently the dose should be decreased. By this method some effect will be obtained in 8 to 12 hours, and full effect within 24 to 48 hours. For less urgent cases 1 drachm t.i.d. for 8 or 9 doses may be used.

Eggleston developed a method of calculating the dosage according to weight. From his findings, 2 or 3 minims per pound of body weight is the quantity required to produce therapeutic saturation. This is given in divided doses; if the case is urgent, half at once, and then half of the remainder each time every 4 to 6 hours; or if not so severe smaller doses are given from the start but so that the entire quantity is given in 2 to 3 days.

The above are but general rules of therapy, and it cannot be emphasized too much that the heart rate (in the absence of toxic symptoms) is the indicator of therapeutic saturation.

Pharmacy

There remains to be discussed that part of digitalis therapy, so often overlooked but which unless proper attention is given to it, frustrates all such medication. This is the question of administrating the glucosides of digitalis in an active and suitable form. Only such preparations as one can be sure have not deteriorated should be used. As yet the glucosides cannot be estimated chemically and we are forced therefore to depend on physiological standardization. The following will give some idea of what is required in the proper preparation of digitalis for clinical use.

Leaf and Powder.—The glucosides contained in digitalis, for our best evidence at the present moment seems to indicate that there are more than one, whose actions differ slightly and whose cumulative actions differ more greatly, are relatively unstable chemical bodies. The glucosidal content of the leaf varies over a considerable range, a defect which can be obviated only by using leaves of known physiologically tested content. It has been shown by many observers that when the leaf is thoroughly dried, packed carefully in full containers, and kept from exposure to air, that it will retain almost its full activity for long periods of time. Packing in capsules will undoubtedly decrease the chance of deterioration. There is no reason to believe that the active glucosides are not absorbed from the powdered leaf given per os as rapidly as from the tincture. There is no evidence that the leaf is more prone to set up gastric or intestinal irritability than the tincture. Adjustment of doses to the requirement of the particular patient cannot perhaps be quite so finely carried out. The standardized leaf is therefore as a rule as valuable as a tincture.

Infusions.—Most infusions of digitalis deteriorate rapidly to a measurable extent, that is 10 per cent or more within 24 hours. It is true that by certain means, digitalis infusions have been prepared, which when carefully bottled have proved more stable, but such infusions are not likely, judging from present evidence, to come into use.

Tincture.—The tinctures are a 10 per cent solution of digitalis usually in 70 per cent alcohol. A well-made tincture, in full bottles deteriorates very slowly, and in some cases imperceptibly in the course of a year; but usually after the lapse of this time, the depreciation in strength is quite measurable. Deterioration is very greatly expedited by merely exposing the tincture to air, an appreciable amount within 2 or 3 months; dilution alone causes a very much more rapid loss of potency, while if the diluent be either acid or alkaline, a decrease of as much as 20 per cent in a week may occur. In consequence of the above considerations, the

better manufacturers put up their tinctures, physiologically standardized, in small bottles (so that once opened, they are used up before too much deterioration can have occurred) and place on the label the date after which the contents cannot be expected to be within the required range of potency.

Preferably the tincture of digitalis should be given alone, or diluted with a little water at the time of taking it. If some vehicle is required, the best one in our experience is the spirits of cinnamon; about a half drachm or less per ounce is ample. However, it is best to adhere to the rule of giving digitalis entirely by itself, except where some covering flavour is absolutely necessary.

Hitherto all the digitalis preparations on the Canadian market have been prepared from English or German grown fox-glove. Some work recently completed in this laboratory has shown that Canadian grown digitalis is quite up to the English standard in glucosidal content. The Canadian leaves used in these investigations were grown in British Columbia and were compared with a sample of English commercial leaf. Tests made by both the standard frog and cat methods, showed that the British Columbia sample had a potency equalling the English, and distinctly higher if grown on well fertilized ground (sodium nitrate). With such facts in hand it seems quite possible that very shortly Canada may be able to grow its own digitalis, and in time supply the entire demand of the Canadian medical profession.

We would like to thank Ayerst, McKenna and Harrison for the collection of the British Columbia samples.

Diathermy in Production of Deep Temperature.—Experiments on animals, culture studies and actual temperature measurements in patients treated by diathermy under the commonly approved technique were made by Ralph Boerne Bettman and Nathan N. Crohn, Chicago, for the purpose of determining the mode of action and effect of this procedure on the skin. They employed cases of lung abscess and empyema, and patients in whom appendectomy, nephrectomy, cholecystectomy and gastrostomy had been done. They were not able to produce an appreciable rise in the deep temperature readings in any case in which the tissue temperature measured was deeply beneath the chest or the abdominal walls. In two cases in which the electrodes were large and the current was applied for a long time, the temperature was slightly raised, and this was accompanied by a corresponding systemic rise in temperature (rectal). It is stated however, that skin effect is a factor in clinical diathermy; just how important a factor the authors are at present unwilling to state. The production of heat is commensurate with the localized density of the current. It is possible to focus the site of heat if it is possible to constrict at a given locality the lines of current. With the present day routine application of the electrodes, it seems impossible to focus the site of heat in any given internal viscus. Factors pointing against a central heating of tissues include a consideration of: 1. Current density, which is ordinarily greatest near electrodes, regardless of the frequency or the nature (whether direct or alternating) of the current. 2. Skin effect, which is dependent on relative specific resistance and specific conductivity of tissues. It is probable that this is an important factor in keeping the current near the surface of the body. 3. Heat equilibrium of the body, which tends to prevent lasting deep local heating. 4. Failure to demonstrate experimentally actual localized deep tissue heating. The indiscriminate placing of equal sized electrodes opposite each other does not guarantee the actual penetration to any great extent of a material amount of high frequency current, and under such conditions the ability of diathermy actually to raise appreciably the temperature of a selected deep organ in the chest or abdomen is questioned. As to the value of the employment of diathermy in extremities in such conditions as fracture or arthritis, when it is believed that heat with its resultant hyperemia will beneficially affect the physiology or pathology of the part, it is probable that to some extent a more efficient heat can be applied to the bone surface by means of diathermy. For such purposes, appropriate application of the electrodes is necessary. When the two electrodes are placed on opposite sides of the chest or abdomen, as is usually practiced in clinical diathermy, it is the opinion of the authors that the greatest amount of heating takes place near the electrodes and that the deeper portions of the body receive a proportionately small amount of current.—*J. Am. M. Ass.*, Feb. 19, 1927.

CORONARY THROMBOSIS AS PART OF ACUTE BACTERIAL INFECTION; DETAILS OF TWO CASES IN WHICH ITS OCCURRENCE WAS SUGGESTED*

By Norman B. Gwyn, M.B.

Toronto

THE important fact regarding coronary thrombosis to-day is that its recognition has become a detail of the clinic rather than a post-mortem discovery. The student learns that thrombotic occlusion of the coronaries may indicate its presence by certain suggestive symptoms and signs, and that it is often not immediately fatal; he has had revised for him the teachings of as late as 15 years ago that "these acute phenomena more or less quickly close the scene",† and instead he hears it stated "the first essential is to think of the condition, and to rid the mind of the notion that such a diagnosis is possible only at autopsy".[1] Herrick's papers from which the last sentence is taken deal entirely with coronary thrombosis associated with chronic degenerative conditions of the coronary arteries. They initiated the change in the views above referred to, and the diagnosis of coronary thrombosis is now read into many cases, which formerly would have passed as acute cardiac failure with or without angina. Interestingly enough, however, one misses from the growing accumulation of instances of coronary thrombosis and cardiac infarction, cases of thrombosis of the coronaries due to and directly consequent upon infection of the vessel wall. That there must be such cases is apparent when we realize the relative frequency of arterial or venous thrombosis of other vessels in the various infective disorders; since such cases undoubtedly occur, then their recognition during life will follow fairly closely along the lines laid down by Herrick. It is probable moreover that recovery in these conditions will take place more often than is demonstrated in the type of cases described by him, since a more elastic coronary system is the object of attack.

It will not be wise in a short paper to dwell upon the extensive subject of arteritis and thrombosis as seen in the infectious disorders. Thrombosis of various vessels is a well recognized complication of variola, typhus, typhoid, influenza, rheumatism, pneumonias, septicæmias and other disorders due to infective agents. Welch, Osler, and Blumer state, for instance, that thrombosis of the veins and arteries is more common in influenza than in any other infectious disorder. Infectious thrombo-arteritis and phlebitis of the vessels of the legs, arms, brain, and mesentery is a clinical detail familiar to any student of the bacterial diseases. There are many records of blocking of the iliacs and even of the aorta itself by large thrombi which have grown on to the affected and roughened intima. For some unaccountable reason one finds, as already stated, extraordinarily few case records detailing the sudden blocking of the coronaries by large infected thrombi, with the exception of those cases of thrombo-embolism in ulcerative endocarditis, and the cases occurring as part manifestation of peri-arteritis nodosa. There are none such in the records of the Toronto General Hospital. Thayer[2] and McCrae[3] record none from the enormous typhoid fever collection at the Johns Hopkins Hospital. Blumer[4] who contributed the section on thrombosis and embolism in *Monographic Medicine*, and in the *System of Modern Medicine* by Osler and McCrae, though referring to coronary thrombosis as an accident in infections, tells me that he has no record of a well described case. The most suggestive feature of the literature on the subject is the frequency with which angina is noted as a complication early in the course of the influenzal infections.

* Read before the Academy of Medicine, Medical Section, February, 1927.

† Sir Richard Douglas Powell in Allbutt's *System of Medicine*.

The many acute heart accidents in the course of the infections would suggest thrombosis of the coronary artery, but autopsy findings have never confirmed the suspicions and anything like the description by Etienne[5] of coronary vein thrombosis in the first and second week of typhoid, or the reference by Landouzy and Seredy[6] to typhoidal arteritis, "its early consequences, sudden death, and the late results, sclerotic myocarditis," are so rare as to attract attention at once.

As concerns arteritis itself, particularly as affecting the coronary arteries, the subject was exhaustively discussed by Wiesner[7] and Weisel[8] fully 20 years ago in their studies upon the effects on the blood vessels of intoxications by the bacterial diseases. The later studies by Thayer[9] on arteritis in typhoid fever and by Klotz[10] on the same conditions in rheumatism and influenza allow one to estimate the extent of the damage to the circulation consequent upon infections; whether through the lymphatic system, through the vasa vasorum, or through the intima direct, the end result is the same, a roughening of the intimal lining and an invitation to the formation of a thrombus.

In two cases which have now been under observation for some time it has seemed probable that suddenly occurring, serious cardiac disorder in the course of their infection was due to a coronary thrombosis, an infectious thrombosis of the same nature as the process seen more usually in the peripheral and cerebral vessels. In both of them the symptoms and course make a picture identical with the types of the disorder as described by Herrick, save that as they were both febrile at the time of the accident, one could not demonstrate the fever spoken of as the fever of infarction, and that an already elevated white cell count precluded the estimation of the leucocytosis of thrombosis; both cases are alive after three and two years respectively.*

CASE 1

Mr. S., aged 46, was seen by Dr. J. E. Elliott complaining of fever and the general symptoms of an infection of the respiratory tract. He had a perfectly clear record in the past as concerns infections or heart conditions. His present affection suggested an influenzal attack though one admits that an agent other than the virus of influenza may have been responsible for the catarrhal symptoms in evidence. After five days of fever and diffuse signs in the lungs it was possible to make out a small patch of consolidation on the right side; the sputum was purulent rather than bloody. Up to this time he had seemed in fair condition but on November 14th the nurse's record states "pulse 72, flutters on moving"; later on in the same day, "pulse 68, irregular". On November 15th, though still febrile to a slight degree the patient got up. He was shortly afterwards seized with a terrific sub-sternal pain and was with difficulty got to bed in an absolutely collapsed condition, pale, sweating, and with the pulse weak, rapid, and fluttering. While under observation by the nurse, he had a seizure like a convulsion, became unconscious for two minutes and his pulse fell to 47 beats per minute; during the unconscious period his face remained blanched and white. With returning consciousness his colour improved and the pulse rate rose to 96. There were three more convulsive attacks during the afternoon, with each there was unconsciousness, and the pulse dropped to 40, and for a time to 20. During the two following days there were numerous slighter attacks, and during this time the pulse rate was never above 40. At the close of the second day it rose suddenly to 90 and never dropped again. Recovery from this time was rapid and Mr. S. insisted on leaving for New York the following week.

During the most anxious stages of the cardiac symptoms it was not considered wise to disturb the patient; certain examinations could, however, be easily performed and it was determined that there was no very appreciable cardiac enlargement. Preceding the signs of heart block the irregularity of rhythm seemed to be due to numerous extra-systoles. With the inception of the new rhythm it was possible to make out four pulsations in the neck to one heard over the apex. The record of November 16th reads: "the pulse is 20 and 25 per minute, now quite regular and quite strong; the systole of the ventricle is strong enough to raise the stethoscope, the extra pulsations in the neck could be determined; after each loud systole over the heart one listened for the suggestions of the blocked auricular contraction; nothing could be heard."

For two days subsequent to the breast pain it was possible to make out clearly the pericardial rub which is so often described as occurring with the infarction of the heart muscle if the area involved is large and on the heart's surface. Seven days after the accident there was found a detail suggesting that the infarction had reached into the right heart cavity, namely, two small areas freshly formed in the lungs over which there was distinct pleural friction.

Fever, signs and symptoms of an acute infection in the respiratory tract, an angina of unusual severity, transient heart block, circulatory collapse associated with a distinct pericardial rub, sketch a very suggestive picture. When one adds to this the detail that before his acute illness the patient had had no symptoms indicative of heart weakness, it is difficult to avoid the conclusion that his attack was the result of an acute coronary occlusion, a thrombosis on an early arteritis of infectious origin. Save that the complication is labelled angina on the sixth day of influenza, and that no rub was noted, a case of Karageorgiades[9] is well worth comparing with this case of Dr. Elliott's.

* Mrs. O., Case 2, has died a cardiac death since this paper was read.

CASE 2

The second case which I have ventured to call coronary thrombosis in the course of acute infections, presents several details of unusual interest. A prolonged bacteræmia, phlebitis of several different veins, pulmonary embolism, splenic tumour, splenectomy, coronary thrombosis, and finally recovery, is a bizarre and unusual picture. The patient gave the following history: she had always been well and had reached her 35th year as an active healthy woman. Quite suddenly she was seized with acute pain in the epigastrium, associated with high fever, jaundice and delirium; there was improvement after three weeks and she was sent down to the city. Slight jaundice and slight fever persisted and a tumour mass was felt, apparently presenting from the splenic area. An acute relapse occurred with high fever; the white blood cells jumped from 20,000 to 60,000. The patient was seriously ill and as the tumour was less moveable than the average splenic tumour and more centrally situated, the possibility of an infected pancreatic cyst or of an abscess was entertained, and an operation was decided upon.

On opening the abdomen Dr. Moorhead found a spleen fixed by many adhesions, and an enormously dilated splenic vein filled with a firm thrombus which reached into the pancreatic venous trunks; any pancreatic affection which may have initiated the illness had resolved. The spleen was removed. For some reason the patient began to improve at once although blood cultures and cultures from the thrombosed viens had shown *Staphylococcus aureus.* It was suggested that the original disease had been a pancreatitis with or without the accompaniment of a gall-stone in the common duct. There were no areas of suppuration in the spleen; the microscopical picture suggested the spleen of Banti's disease with large thrombosed venous sinuses. This was the report from the pathological department of the Toronto General Hospital but we will allow any re-arrangement of the diagnoses to be made. Ten and twelve days later right and left femoral veins became involved in an acute thrombo-phlebitic process, blood cultures again shewed *Staphylococcus aureus;* both lungs were the recipients of emboli from the thrombi in the veins. The temperature was falling, however, and the patient was better. In the fourth week after the operation, still febrile and with yet a positive blood culture and elevated white count, the patient was seized suddenly with a severe præcordial pain. She collapsed, became unconscious and developed a rapid running pulse. There was no remarkable degree of respiratory difficulty when I saw her. For several hours she lay almost pulseless and looked beyond recall. The blood pressure had fallen to a disappearing point. At the end of ten hours some improvement began. Distinct pericardial friction, which persisted for 48 hours made one feel that a coronary thrombosis rather than a pulmonary embolism was the explanation of the symptoms. The heart had seemed enlarged to right and left, and the lungs gave evidence of moisture. The heart action was weak and rapid for the next ten days but it gradually improved in its quality. The patient left in good condition save for the discomfort attendant upon the phlebitis.

Both these cases conform closely to the requirements set down as pointing to a diagnosis of coronary thrombosis. The sudden angina severe to a degree, the cardiac collapse and acute upsetting of the heart's rhythm, the presence of a pericardial friction where none was present before, make a very suggestive history. The added detail of slight fever and rise of the white blood cells (the reaction of infarction), could not be considered owing to the nature of the patient's illnesses. Secondary accidents such as emboli from the thrombi which may form in the ventricles when the infarction reaches the endocardium did not take place. That both cases should have recovered is remarkable in the face of the severity of their symptoms. Such good fortune will not attend all instances of coronary thrombosis in the course of infections, yet the paucity of autopsy records dealing with this particular condition can not be without some significance. Since thrombosis occurs in so many different arteries in course of the various infections it stands to reason that the coronaries must suffer in some proportionate degree, and having recognized the existence of acute thrombosis in arterio-sclerotic coronaries, it is important that we approach the question of acute cardiac incidents in infections having the possibility of thrombosis of the coronaries always in mind.

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PEPTIC ULCER—FROM THE STANDPOINT OF THE RADIOGRAM*

By A. Stanley Kirkland, M.D., C.M., L.M.C.C.

St. John, N.B.

FOR the purpose of this discussion I will include under the above heading ulcers in three regions of the alimentary tract: the gastric ulcer, the duodenal ulcer, and the jejunal ulcer. The causative agent is, no doubt, practically the same in all three. I will not enter into the debate as to the actual cause of lesions in the mucosa, but may I be allowed to state that I believe patients with ulcer have some individual weakness, or predisposition, or at least that the ulcer in the upper gut is but a sign or symptom of a general disturbance of the body metabolism, putting aside for the present all discussion of embolism, trauma and any other theoretical factors as a cause.

Site of Occurrence

In the stomach the ulcer is most commonly found on the lesser curvature in the following places in order of frequency: (1) middle third, (2) cardiac end, and (3) pyloric portion; occasionally a gastric ulcer occurs on the posterior wall, but this location is rare. Duodenal ulcers are practically all found in the first two inches distal to the pylorus. Jejunal ulcers are seen usually following gastro-enterostomy and cling to the margins of the stoma or very close to it.

The statistical data quoted in this article are drawn from a series of 2,000 gastro-intestinal examinations made in the past four and a half years at the St. John General Public Hospital and the St. John County Hospital. About 5 per cent of the proved cases were gastric, 94 per cent duodenal, and 1 per cent jejunal.

The x-ray examination of a case of gastric ulcer shows usually a niche on the lesser curvature. The next most common sign is associated with the first and takes the form of an incisura on the side of the viscus opposite the niche. This pair of signs is pathognomonic. The variations from this ideal indication are numerous and whereas the man in the street cannot fail to diagnose a case presenting the dual finding of niche and incisura, it sometimes becomes extremely difficult to differentiate between a real intrinsic gastric lesion and an apparent disease caused by a disturbance at a distance; thus an abnormality in the outline of the stomach is frequently caused by spasm, secondary to duodenal ulcer, cholecystic disease, chronic appendicitis, or pancreatitis. It was early laid down that the exhibition of belladonna to the point of physiological tolerance would relieve all spasm in the stomach due to a lesion outside of the stomach, but this, unfortunately, has not proved entirely true, as occasionally a perigastric cancer will produce a spasm which does not relax under antispasmodic treatment, and the same is true of spasm caused reflexly by duodenal ulcer.

Secondary signs of gastric ulcer include changes in motility of the organ producing a retention of stomach contents. This inefficient emptying of the organ is in all likelihood due to a combination of causes such as interference with normal peristalsis, hypotonus, and probably reflex spasm of the pylorus.

The location of a persistent, sharply localized tender area superimposed upon a niche or deformity in the stomach outline, is a most important addition to the sum of our argument in favour of ulcer. While attempting to localize the tender point, palpation may also establish the fact that the stomach has become fixed to its surrounding structures by adhesion. This restriction of mobility, as well as the point of tenderness is not always demonstrable.

There have been described a multiplicity of further secondary signs which may or may not have any bearing on the formation of a diagnosis in cases of ulcer of the stomach, but disappointment will be obviated in the greater number of cases if a definite diagnosis is confined to those cases which show the niche and incisura; and if a tender point may also be definitely detected with a six hour retention, surgery is indicated without fear of error.

* Read before the Fredericton Medical Society, March 8, 1927.

Gastric ulcer sometimes provides that picture of hour-glass stomach dear to the lover of the spectacular; differential diagnosis here calls for the elimination of pure spasm and syphilis of the stomach. By careful palpation of the stomach and with the use of belladonna it may be determined satisfactorily whether an apparent hour-glass constriction is due to disease in the body of the stomach or merely to spasm, for without local disease gastrospasm will almost always disappear under the influence of palpation and antispasmodics, keeping in mind at the same time the exception mentioned above. However, in those cases in which the roentgenologist has satisfied himself that he is really dealing with a biloculated stomach it is always well to warn the operator that he will find no such picture in the abdomen as appeared on the photographic film, for under anæsthesia even an intrinsic hour-glass stomach may approach the normal in appearance.

Duodenal Ulcer

This condition which provides 94 per cent of all peptic ulcerations of the gut in our series exhibits in some cases a clinical history sufficiently illuminating to the physician to make x-ray study necessary only as a confirmation of a proven entity, and to eliminate or show coincident disease; but even in such definite instances the x-ray report is the vehicle of information of the greatest moment, for as I hope to show later, the roentgenologist should indicate the line of treatment. On the other hand, the x-ray is more frequently the deciding factor which in determining the presence of a duodenal ulcer clears up a confusing mass of misleading symptoms which have frustrated the treatment prescribed for digestive instability.

The radiographic investigation of the stomach and upper small bowel in a suspected case of duodenal ulcer should be approached with the most acute interest and should involve the utmost devotion to technique and detail, for when one considers that our attention is attracted in most cases to a section of bowel not more than two inches in length, and that it is continuous with and contiguous to some of the most important and vulnerable structures in the abdomen, the necessity for care in examination and precision in observation is immediately apparent. The preparation of the observer's vision should occupy at least 20 minutes in the dark. The penetration desired for the x-ray tube should be nicely gauged and the perfection of the fluoroscopic screens should be above reproach. I prefer that the patient be in the erect position; occasionally, however, additional information is obtained by subsequently examining the area with the patient prone. Observation of the duodenum should proceed during and after the swallowing of the opaque meal; at first, without palpation and later with the aid of manual manipulation using the gloved hand, or with a suitable palpatorium. Where spasm prevents the early filling of the duodenum, patience, change of position or manipulation will usually allow a sufficiently clear view of the region to satisfy a trained operator. Rotation of the patient under observation should be a routine practice. This is somewhat difficult perhaps when the prone position is used.

In a good number of cases the fluoroscopic view at once shows deformity or irregularity sufficient to indicate the duodenum as the site of disease, but I find that many fluoroscopic examinations do not show some irregularities which later appear on the film. Thus in every case the stomach and duodenal area should be serially filmed as soon as possible after the ingestion of the meal. A sufficient number of films should be used to prove the permanence of any defect observed; the actual number will be regulated perhaps more by the necessity of economy than by the desire of the roentgenologist. Again, as in the presence of gastric ulcer, deformity or irregularity is the sign par excellence of the presence of the lesion. The niche and incisura are again the chief types of deformity but are perhaps reversed in order of importance, and in the frequency of their appearance or recognition. True, the niche is frequently seen, but in my own experience it is more usual to see an indentation of the outline of the gut representing spasm opposite the site of the lesion. This indentation may occur anywhere on the circumference of the duodenum, but is perhaps more frequently seen on the superior border; next in frequency on the inferior border, and not at all infrequently on the base of the duodenal cap. With the patient correctly rotated irregularities are also

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demonstrated on the posterior lateral outline of the gut. Very often there appears a multiplicity of irregularities of outline which gives rise to most bizarre deformities and grotesquely distort the appearance of the duodenal shadow. These multiple irregularities may be due to multiple ulcers, spasm or to eccentricity of cicatrization. Be the deformity what it may, the repetition of any irregularity on several films, or at repeated fluoroscopic observations, is the chief factor in establishing a diagnosis. Deformity is the absolute requisite. There are however, many other corroborative findings which I may briefly describe.

Associated Spasm is certainly the one most frequently seen. It may be in the immediately adjacent segment of gut, or at some distance in the stomach where it may be sufficiently pronounced to simulate hour-glass stomach.

Localized Tenderness is much more easily established and is equally as important as in the consideration of gastric ulcer.

A Decrease in Normal Mobility due to fixation of the gut by adhesions, suggests a lesion of sufficient duration to have involved surrounding structures and to have smelted the gut to its neighbouring organs by the formation of organized scar tissue.

Peristalsis may be increased proximal to an active ulcer, or in later stages it may be replaced by atony due to fatigue. Peristalsis is usually increased distal to the ulcer, giving rise to diarrhœa or ribbon stools. Retention of the meal in the stomach is a common end result of an ulcer in the duodenum, due to obliteration of the lumen of the gut by scar or by persistent spasm. In the earlier stages the stomach will empty rapidly and this is understood when we remember the early increased peristalsis.

Jejunal Ulcer

Jejunal ulcer has in my experience been demonstrated only as a sequela to gastro-enterostomy. I am unable to give any satisfactory figures as to frequency of occurrence following gastro-enterostomy because those cases which do well are not seen by us, but there can be little doubt that it is a fairly common consequence of mechanical interference with the food channel. This ulcer appears on or close to the lip of the stoma. It is the cause of great pain and distress so that the patient will state that his ulcer is not better but worse, after his operation. The x-ray will show a hypertonic, hyperperistaltic stomach with a definite, sharply defined point of exquisite tenderness over the stoma. The meal cascades rapidly over the ulcer area into the small bowel. In only one case have I seen a retention in the stomach in relation to a jejunal ulcer. At operation, the stoma in this case was patent to two fingers, with the ulcer on the margin of the stoma. So we feel convinced that the retention in this case was due to spasm. In one case I found that the jejunal ulcer was excavated giving a pocket which retained barium sufficient to present a barium rest shadow on the film. This short description of ulcer in three common locations includes most peptic ulcerations.

Treatment

It may be said that the discussion of treatment has no place in the report of a radiographic gastro-intestinal examination. A few years ago there would have been no discussion about it at all; a little later the point was one which always caused a debate whenever a clinician and roentgenologist were found capable of civility one to the other. Now there is very little likelihood of wrangling, for both clinician and surgeon and roentgenologist have agreeably concluded that the x-ray examination is not a mysterious rite apart from true medicine, but is actually an important, and definite portion of the complete gastro-intestinal study necessary to arrive at a satisfactory diagnosis of any digestive irregularity. No one of the triad of investigators is any longer striving to attract to himself the whole credit for any successful diagnostic coup; on the contrary, it is found decidedly comfortable to share with one's associates the useful lesson of a proven error.

To confine myself to the field of peptic ulcer for the present, the roentgenologist may, I feel confident, provide very valuable indications as to treatment, the acceptance of which by the referring physician will smooth the path of acceptable therapy, and obviate the blunder of too early or unnecessary surgical intervention. When one can determine a perforating or penetrating ulcer of the stomach wall, found usually on the lesser curvature of the organ or occasionally on its posterior wall, it is safe and desirable to advise immediate surgical relief. The excision of a wedge to include

the ulcerated area or the cauterization of the area with subsequent proper closure, will practically always give the desired result. Some surgeons still do a gastro-enterostomy at the same time but there does not seem to be any good argument to support such a course. In fact I have seen cases such as above described which developed jejunal ulcer following the unnecessary gastro-enterostomy, and the last stage of such a victim of enthusiasm was worse than the first. Surgery should again be advised in the radiographic report when it is shown that the stomach is dilated and mechanically inefficient to empty itself, and when the cause of this condition is due to an ulcer at or near the pylorus which has become cicatrized to such an extent as to close the outlet of the viscus. In this type of case the result of gastro-enterostomy is nearly always of benefit and in most cases, is spectacular. The patient who has had a long history of stomach distress with loss of weight, dehydration of tissues and distressing periodical vomiting as the only means of evacuating the accumulated, fermented, and retained stomach contents, becomes immediately happier, regains his appetite and weight, and resumes his work.

Now I may no longer avoid the horns of a dilemma which is fortunately becoming less common, that is: shall it be held a sin to recommend such mild measures as medical treatment for a condition which has been held to be almost totally surgical, *i.e.*, duodenal ulcer? I am convinced that a roentgenologist who suggests surgical treatment for all duodenal ulcers, or worse still, simply reports the condition to be present and makes no suggestions for therapy, is guilty of an abuse of the trust reposed in him by his colleagues. In my practice, it is my habit to definitely state whether I consider a stomach surgical or non-surgical, and I am told that this clean cut decision is held to be of value to the referring physician in deciding what treatment he will advise. In those cases in which it is decided to adopt medical measures, the course of such treatment must be prolonged, and should be associated at first with rest and a regulated diet. At the end of a suitable period the patient should be again referred to the roentgenologist for further x-ray examination. If the condition has improved clinically, a year may be allowed to elapse before another examination is necessary. At these later examinations the relative activity of the ulcer should if possible be determined. Such signs as the presence or condition of the niche, spasm in the immediate neighbourhood of the lesion, hypertonicity and hyperistalsis, should all be carefully weighed and compared with the previous findings. Generally if the individual has been conscientious in his regimen of treatment, the second examination will show marked amelioration in clinical symptoms, and improvement in or disappearance of the x-ray signs; progressive scarring of an ulcer near the pylorus may show signs of beginning obstruction at this point. If obstruction is developing, the stomach should be carefully watched, and when the obstruction is sufficiently developed, the surgeon should be advised that the time has come to do a short circuiting operation.

Unfortunately there are a certain number of persons suffering from peptic ulcer who are unable to maintain their strength or to carry on their work on the amount or choice of food allowed in a diet for ulcer and the physician is called upon to change from an ideal to a practical course of treatment. These people are desirous of a short cut to a condition where they will be able to do their work. It is in this type of case where immediate removal of the ulcer area may have to be done. Pylorectomy is performed with gastro-enterostomy for duodenal condition. From my own observations, I do not feel inclined to favour a pylorectomy except as a last resort. The observations which are the basis of this opinion cover not only cases handled in our own hospital, but also cases, which through our caution or by the desire of the patient have been referred to larger centres, where men of the widest experience and of the greatest dexterity and operative ability have performed the indicated surgery. A fair number do not recover and a large number have either a recurrence or develop jejunal ulcer. I know that some of our cases handled in larger cities are listed as successes because they left the hospital well, their subsequent histories being unknown to the operator. I do not decry surgery, but I must again lay stress on the fact that I have very definite ideas about the time for surgery, and also that the x-ray examination affords a good indication of the proper time for surgery.

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A SYSTEM OF MICROSCOPIC TUBULES IN THE THYROID GLAND*

By R. R. Fitzgerald, M.D.

Montreal

In 1923 Williamson and Pearse described a system of microscopic tubules in secreting epithelia.[1] The purpose of the present communication is to report the results of investigations which confirm the presence of these microscopic tubules in the thyroid gland. Their variations in different physiological and pathological states of the gland are described, and their significance discussed.

Material. — The microscopic tubules were demonstrated in normal thyroid tissue obtained at autopsy at the Montreal General Hospital, and in pathological material removed surgically in the service of Dr. E. M. Eberts.

Technique. — Tissue was prepared by the method described by the originators.[1] The special feature of the method is the use of a mordant containing fluorochrome, potassium bichromate, and corrosive sublimate. Blocks of fresh tissue were fixed in formalin immediately after removal, mordanted in the above solution, embedded in paraffin, and sectioned. Sections were stained with phosphotungstic acid-hæmotoxylin.

The System of Tubules

When tissue is properly prepared by the above method a new structure is seen in the epithelium. This is a meshwork of fine black lines situated in the cytoplasm of the epithelial cells lining the thyroid alveoli (Fig. 5). These lines are seen to be very close to the internal margin of the cytoplasm. They are actually embedded in the cytoplasm, run in a plane parallel to the inner surface of the cell, and make contact and join with similar structures from adjacent cells. Very rarely a radial branch is noted passing outward between epithelial cells towards the periphery of the acinus. Under high magnifications these apparently solid lines are found to be tubular structures with a definite lumen and granular contents. (Fig. 7).

These minute tubular structures cannot be looked upon merely as accentuated cell margins. Figure 1 shows clearly the internal limiting wall of the cells and the microscopic canaliculi as separate and distinct structures. Inspection of Figure 6 demonstrates that these microcapillaries are not simply optical artefacts produced by vacuolation of the colloid content of vesicles.

Variations in the Tubules in the Normal Gland

The histological studies of Williamson and Pearse, extending and completing the work of previous investigators, seem to prove conclusively that two distinct secretory processes must be recognized in the normal thyroid gland. One is the relatively passive process resulting in the storage of colloid; the other is an active process resulting in the formation of a distinct product which is not colloid. Between these two separate phases there is an indifferent or resting phase.[2 & 3]

The appearance of the system of microcanaliculi varies in different parts of the normal gland according to the particular stage of physiological activity which happens to be present.

In the colloid-storage phase they are drawn out to minute hair-like lines which are almost invisible (Fig. 2). In the indifferent or resting phase they appear as thick black branching and communicating lines occupying a position near the centre of the epithelial column. The resulting structures sometimes resemble giant mitotic figures (Fig. 3). In the active secretory phase they appear as purple, almost transparent tubules filled with deeply chromatic coarse granules (Fig. 4).

* From the goitre clinic of the Montreal General Hospital.

Variations in the Tubules in Pathological Glands

The tissue of Graves' disease exhibits these structures in every vesicle. (Fig. 5). Near the internal margin of each cell there is seen a sharp black line which joins with similar structures from bordering cells to form a continuous chain of microcanaliculi. Slight enlargements appear at the points of junction of the individual segments. Whenever the section happens to pass through the apex of an acinus the microtubules are seen to join with each other to form patterns not unlike ordinary chicken wire. (Figs. 4 and 5). In areas where involution of the parenchyma has occurred (as in cases treated with Lugol's solution), the microcanaliculi are less conspicuous, smaller in calibre, and do not show the presence of granules.

The so-called "interacinar cell rests" of the thyroid gland have been considered by Wölfler and others to be the starting points of adeno-

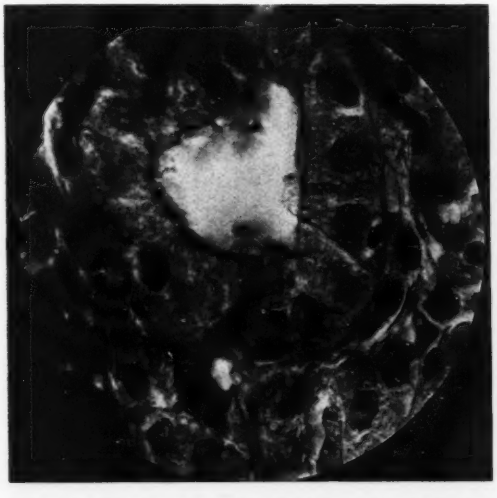

Fig. 1.—Vesicle in lacunar stage of secretory activity. Microcapillary system applied to innermost surfaces in epithelial cells. Note that the internal cytoplasmic margins are quite distinct from the black lines representing microcanaliculi.

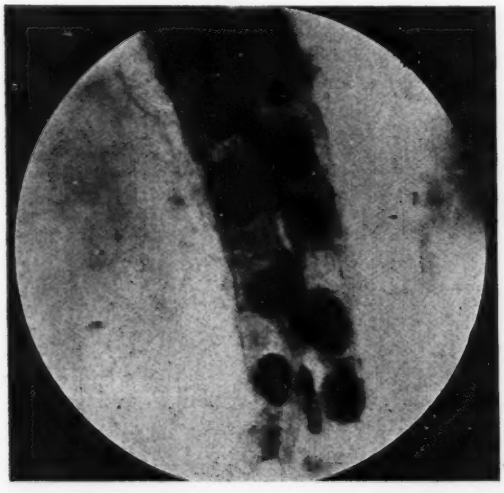

Fig. 2.—Colloid storage phase. Walls of two adjacent vesicles separated by endothelial elements. Microcanaliculi just seen as black lines immediately beneath the inner margins of cells. Enlargements on these lines denote points of fusion with other canaliculi.

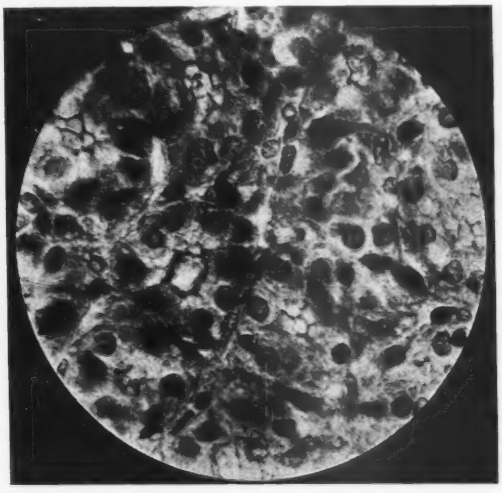

Fig. 3.—Inter-acinar cell rest. Epithelium in indifferent or resting phase. Eight microcapillary systems seen. Epithelium arranged in circles about each system.

Fig. 4.—Active secretory phase. Cylindrical cells with granular cytoplasm. Microcapillaries dilated and filled with granules.

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matous growths, both local and diffuse. Examination of these areas by the methods employed in this study reveals the fact that the epithelial cells composing these interacinar cell rests have a specific arrangement, and show a constant relation to the microcanaliculi systems. Figure 3 shows a large interacinar cell rest containing eight microcapillary systems about which the epithelial cells are grouped in circles.

This suggests that the interacinar cell rests are really groups of collapsed acini whose walls are made up of a single layer of epithelial cells with a central potential space bordered by a system of communicating canals microscopic in size.

Adenomas.—The so-called "fœtal adenomas", built of closely packed small vesicles, show well-developed microcapillary systems. (Fig. 6). In adenomas composed of colloid-containing tissue the microcanaliculi are absent, or are too fine to be detected by this method.

Discussion

The significance of this system of microtubules has not been established. They cannot be dismissed as artefacts for reasons already given, but with our present scanty information about them it is almost impossible to do more than speculate on their importance or function.

Their point of origin and their final destination or ending have not been established, although Williamson has been able to follow radial branches between epithelial cells to the lymphatic space outside the acinus.[2]

Their association with the process of active secretion is constant and striking. They can only be demonstrated with great difficulty when the gland is in the stage of colloid storage, but they are constantly present, large, and contain granular material when the epithelium is in the stage of active secretion.

It will be recalled that this "active secretory phase" presents a characteristic histological pic-

Fig. 6.—So-called fœtal adenoma. Small vesicles and blood capillaries. Microcapillaries in each vesicle. Contents of alveoli show that the microcapillaries are not artefacts produced by vacuoles.

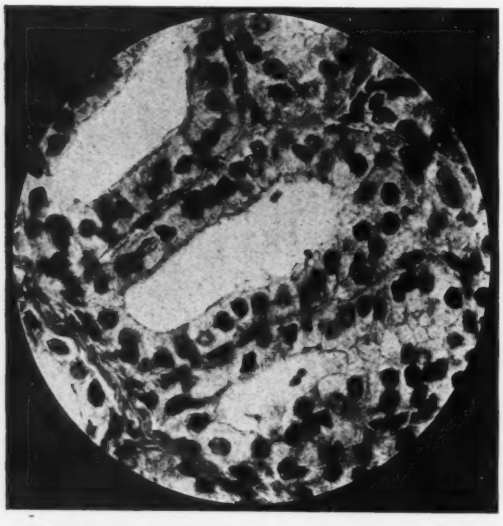

Fig. 5.—Graves' disease. Microcapillary network in cytoplasm.

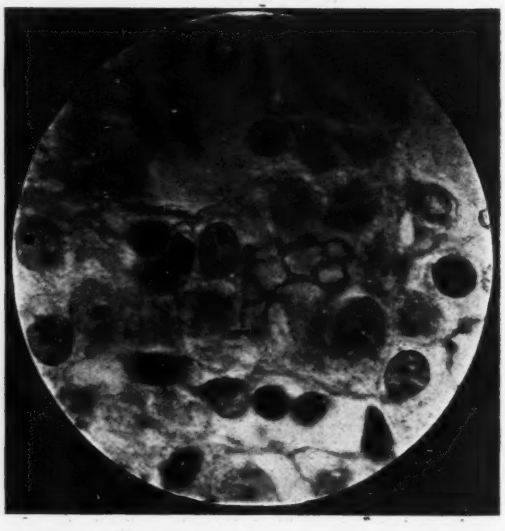

Fig. 7.—Adenoma, "fœtal", benign. Distended microcapillaries.

ture which is the result of a large number of distinct but related changes. These associated changes are summarized by Williamson and Pearse as follows:[2] (a) distension of lymph spaces; (b) lymph cell infiltration; (c) swelling of the epithelium; (d) migration of the nuclei; (e) appearance of granules in the cytoplasm; (f) vacuolation of the cytoplasm; (g) accumulation of fluid in the central space; (i) a deeply stained microcapillary system with granular content.

Bearing in mind the conspicuous presence of distended microcanaliculi in all actively secreting tissue it seems logical to suggest that they may be channels of absorption in which secreted material is collected from the interior of the acinus, conveyed outward through the layer of epithelial cells, and delivered to the lymph spaces outside the vesicle.

This theory finds definite support in the variations noted in the microcanaliculi systems in the different physiological phases of secretion in the normal gland. It may also be reasonably applied to the changes occurring in the gland in Graves' disease, and it is not contrary to the known embryological details. But when the neoplastic states are examined well-developed canaliculi are found in tissue in which the other characteristic features of secretory activity are lacking. Figures 6 and 7 are taken from sections of a "fœtal adenoma" removed from a patient who had a normal basal metabolic rate and no symptoms of "toxicity." The epithelium does not show the changes accompanying active secretion, nor are the associated alterations in the surrounding tissues visible. The lumen contains a substance very closely resembling colloid, and it will be remembered that colloid is invariably absent in actively secreting thyroid tissue. Yet this "fœtal adenoma" tissue contains the largest microcanaliculi systems observed in the course of the present study.

Thus the largest microcanaliculi appear in tissue lacking the other characteristics of active secretion, and, unless we consider their distended appearance to be the result of stagnation and passive distension by secretion unable to escape in the ordinary way on account of encapsulation, this observation would tend to detract from the theory that the microcanaliculi act as absorption channels for secreted substances.

It is hoped that new information on this subject will be available when the present study is completed by observations on the appearance and variations of the microcanaliculi in the fœtus and in the malignant neoplasms.

Summary

1. The presence of a system of microscopic capillaries in the thyroid gland is confirmed.

2. The appearance of this system is described in different physiological states of the normal gland, and in some pathological states of the diseased gland.

References

1. *J. Anat.*, 1923, lvii, 193.
2. *J. Path. & Bacteriol.*, 1923, xxvi, 459.
3. *Brit. J. Surg.*, 1926, xiii, No. 51, 466.

The most wonderful discovery of the day, the wresting from nature of yet another of her secrets, is that of television, the revealing of the faces of persons sitting in darkness in another room. Mr. John Baird, the discoverer, terms his televisor a "machine for seeing by electricity"—"a telephone for the eye." The inventor has been experimenting for some time with fairly good results. He began by transmitting shadows and then an advance was made to the transmission by the light reflected from them of the images of actual objects; at last after months of continuous research, he experienced the great triumph of seeing upon the screen of the receiver a living image with light and shade and detail, in short, true television. Mr. Baird first experimented with ultra-violet rays, but they, while possessing an exceedingly powerful photo electric effect, were very bad for the eyes. It then occurred to him to try the infra-red rays and these produced the result that it is possible by means of the peculiarly sensitive eye of the televisor, to see an object in what appears to the human eye to be pitch darkness. Television can be produced in normal lighting, and in total darkness. According to the inventor, a machine is being constructed by which it will be possible to see by wireless, persons speaking at the broadcasting stations and to watch their movements. Mr. Baird states that there is no scientific reason why persons shall not see other persons across the Atlantic.—*American Medicine*, Jan., 1927.

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TOXIC CIRRHOSIS OF THE LIVER*

By Charles L. Connor

Montreal, Que.

CIRRHOSIS of the liver is to most of us a scarred atrophic condition, and though several types are readily recognizable both clinically and pathologically, a separation between toxic cirrhosis and that type designated alcoholic cirrhosis is usually not made. One speaks of biliary cirrhosis (or infectious or Hanot's cirrhosis), of pigment cirrhosis (anthracosis, hæmochromatosis), of cardiac cirrhosis (the result of successive attacks of cardiac decompensation), and of the cirrhosis, or, properly, the fibrosis associated with syphilis, tuberculosis, or carcinoma of the liver. Toxic and alcoholic cirrhoses are most frequently included in the term Laennec's cirrhosis, and while both are essentially toxic in origin, the exact etiology of neither is known. It is certain, however, that the causes cannot be found until they are clearly recognized as separate entities.

In 1911, Mallory[1] described a type of cirrhosis or sclerosis of the liver following acute yellow atrophy, or a severe necrosis of the liver of a similar nature. He showed that this type is the result of the condensation of liver stroma following the solution, phagocytosis, and absorption of liver cells, and that there is no actual increase in fibrous tissue. There is a marked regeneration of liver cells, so that histologically one sees islands of greatly hypertrophied liver lobules between wide areas of fibrous tissue, in which the remains of destroyed liver lobules can be found by noting the bile ducts (by now also proliferated to greater number than usual) surrounding a central vein. He distinguished this type sharply from the so-called alcoholic or portal cirrhosis. Mallory's descriptions are based on the histology chiefly, and are not particularly concerned with the gross anatomy or clinical aspects of the cases.

In the same year Milne[2] reported a case of subacute yellow atrophy of the liver lasting 10 months. He had previously reported 3 cases of acute yellow atrophy in children lasting from 6 to 10 weeks.[3] He mentioned that while this disease usually caused death in a few days, cases are reported with death in from 30 hours to 40 days. He showed that what is known as acute yellow atrophy may be subacute or chronic in nature, and that the end result of these latter may be exactly similar to cirrhosis of the liver.

Pratt and Stengel[4] have described 5 cases which fit in clinically with toxic cirrhosis of the liver, with diagnoses by Mallory. I have recently come across a series of cases which illustrate rather well both the clinical and pathological characteristics of this condition, and show the gradations between the atrophy and the subsequent cirrhosis.

Case 1

A man, aged 33, entered the Montreal General Hospital August 21, 1926, service of Dr. C. P. Howard, complaining of jaundice and itching of the skin. On July 15th he had noticed that his skin and eyes were becoming tinged with yellow. From this time until

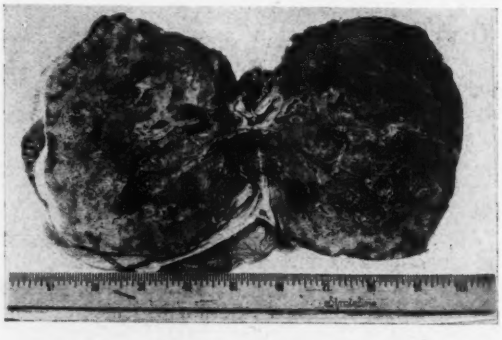

Fig. 1.—*Case 1.*—Acute yellow atrophy. The small size is apparent, and the stroma stands out prominently due to loss of liver substance. In places the liver seems to be fibrosed due to collapse and condensation of the stroma.

* From the Pathological Laboratories of the Montreal General Hospital and the Peter Bent Brigham Hospital, Boston. Read in part before the regular meeting of the Montreal Medico-Chirurgical Society, February 18, 1927.

admission the jaundice increased slowly, and he vomited occasionally. At the hospital the liver edge could be felt. There was no pain and no tenderness, but jaundice was marked. This began to clear in 2 weeks, and 3 weeks after admission the patient insisted upon being discharged. He came back in a week, now with pain, weakness, vomiting, and deep jaundice, and died September 24, 1926, after an illness lasting 10 weeks.

Necropsy (A-26-178) showed ascites, (500 c.c.) and a liver weighing less than 800 grammes. It was shrunken and wrinkled, and contained numerous yellowish areas of necrosis. All the liver tissue was intensely bile stained. (Fig. 1).

Microscopically there was widespread parenchymatous necrosis, but in places vestiges of liver lobules remained. In many areas the stroma had collapsed, the sinusoids were engorged with blood, and there was considerable endothelial cell invasion. Numerous small groups of regenerating liver cells were present, (Figs. 2 and 3) and many large patches of apparent fibrosis.

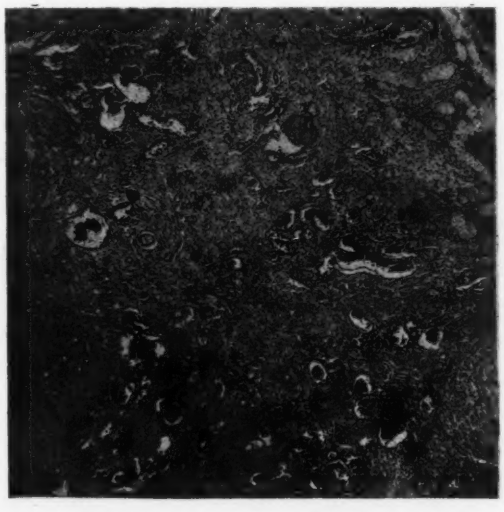

FIG. 2—*Case 1.*—Acute yellow atrophy. This shows the great loss of liver substance leaving the fibrous tissue behind. Engorged blood vessels are numerous, and a few remaining bile ducts are seen. Photo-micrograph x 80.

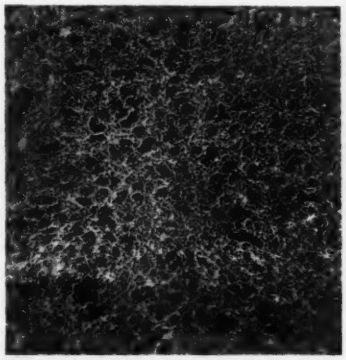

FIG. 3.—*Case 1.*—Acute yellow atrophy. Islands of regenerating liver cells. Photomicrograph x 100.

This is a case of acute yellow atrophy of longer duration than usual, showing moderate regeneration of liver lobules, with areas in the liver which have healed. It is a case which started as catarrhal jaundice clinically, but which at the end presented the signs of acute yellow atrophy with ascites, and what may be considered as early cirrhosis of the liver.

CASE 2

An Italian dentist, aged 46, was admitted to the Peter Bent Brigham Hospital, Boston, September 23, 1925, to the service of Dr. H. A. Christian. His complaints were swelling of the abdomen and legs. Eight months before he had had an attack of influenza which kept him in bed two weeks, and convalescing at home for a month. For a period of two month, beginning three months before admission, he had a chill followed by fever as high as 103° F. almost every third day. For two months he had had a steadily increasing swelling of the legs and abdomen. On entrance he had slight jaundice, a distended abdomen, and marked œdema of the feet, legs and thighs. The temperature ranged between 98° and 100° rising usually in the afternoon. The pulse averaged 100. The bile index was 50, and there was bile in the urine and fæces. White blood cells were 12,300 to 25,000; the differential count was normal. The abdomen was tapped three times and 5,000 to 7,000 c.c. of yellow liquid removed. A guinea pig injected with some of the liquid was negative for tuberculosis. The jaundice gradually deepened, the patient became weaker, and died 56 days after admission. The known duration of the disease was about 5 months. (If the attack of "influenza" can be considered as having anything to do with the subsequent illness, the duration might be considered as 10 months.)

Necropsy showed marked jaundice and ascites. The liver weighed 900 grammes. It was nodular and shrunken, with rounded edges. Marked distortion was noted. Microscopically, there was evidence of acute necrosis in small patches throughout the liver, with a few polynuclear and endothelial cells in and around the necrotic areas. There was, at the same time, the appearance of a marked fibrosis. Wide bands of connective tissue in which numerous thin walled blood vessels and bile ducts were present, lay between greatly hypertrophied liver lobules. These lobules contained no central veins, and seemed to have lost connection with bile ducts. There was considerable bile in the cells.

This is an instance of well developed cirrhosis of the liver showing evidence of necroses remaining in the liver. It is the end result of a subacute disease of unknown origin manifesting itself as a type of "atrophy" of the liver.

CASE 3

A girl, aged 26, was admitted to the Montreal General Hospital, October 26, 1926, to Dr. C. A. Peters' service, complaining of abdominal pain, pain in right side and back with vomiting. Had had numerous childhood diseases including poliomyelitis. Five years ago she began to have gaseous eructations after meals, and later on to have pain across the abdomen at night, which in time became more or less constant; it was always in the right upper quadrant. There was slight fever, and progressive weakness. This condition persisted for a year, when the pain became worse, jaundice began, and the stools lost colour. She was operated upon for gall bladder disease,

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and was told that she had cancer of the liver. The jaundice cleared up in two weeks, but the pain persisted, and since that time she has not been well. Four years after the operation she entered the Montreal General Hospital with slight jaundice, a small liver, a large spleen, and ascites. She died 3½ months after entrance. Duration of disease about five years.

Necropsy (A-27-20) showed moderate ascites, varices of the œsophagus and mesenteric veins, and a liver which was markedly nodular, weighing 780 grammes (Fig. 4). The surface of the liver was covered by smooth nodules, each measuring about 5 mm. in diameter, and each being raised above the surface about 2 mm. Between these nodules lines of firm fibrous tissue could be seen. On the cut surface the liver tissue was collected into small adenomatous masses, and there was considerable increase in stroma. Blood vessels within the liver were dilated. The gall bladder showed no lesion and there was no obstruction to any of the ducts.

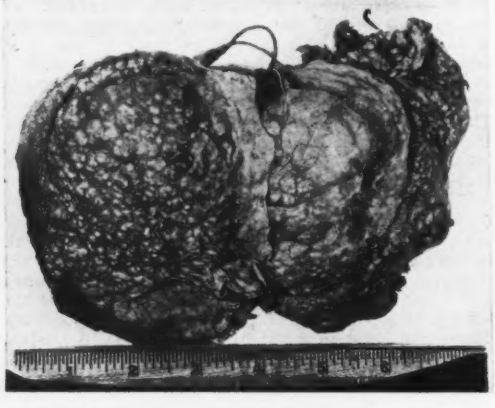

FIG. 4.—*Case 3.*—Toxic cirrhosis. The small size, the nodular hyperplasia, and deep scars are evident. Compare with Fig. 8.

FIG. 5.—*Case 3.*—Toxic cirrhosis. Widespread destruction of liver tissue followed by repair. In the area shown the remains of numerous liver lobules can be seen. This is essentially a healed acute yellow atrophy Photomicrograph x 80.

Microscopically, the liver showed marked regeneration of an adenomatous nature. Large areas of fibrous tissue in which bile duct proliferation was prominent were present. In these areas, also, numerous veins were seen. There was no evidence of active fibroblastic proliferation, but numerous lymphocytes were found. In a few places what appeared to be a lobular arrangement of bile ducts surrounding a vein was noted (Fig. 5). These were taken to be the remains of liver lobules, from which liver cells had entirely disappeared. This is a typical case of toxic cirrhosis following a chronic necrotizing lesion of the liver lasting nearly five years.

These three cases illustrate the development of what must have been acute, subacute, and chronic "yellow atrophy" of the liver into conditions which represent various stages of cirrhosis. The first case presents little evidence of actual fibrosis, but if it had healed, as many similar cases undoubtedly do, one can easily predict the type of lesion which would have followed. There were broad bands of fibrous tissue stroma, which by condensation would exactly duplicate the picture seen in Case 2. In addition there was ascites, a condition not usually associated with acute yellow atrophy. Case 2 shows marked cirrhosis, with, at the same time, numerous large and small patches of necrosis remaining. In Case 3, the cirrhosis and nodular hyperplasia are the most marked features, with very little evidence of a still active necrotizing process.

The etiology of these conditions is obscure. They are constantly confused with "alcoholic", or more properly, portal cirrhosis, because the last few months of illness present much the same symptoms. The direct causes of acute yellow atrophy are, of course, unknown. One may recite the toxæmia of pregnancy, the definitely known necrosis following arsenical poisoning, and the late effects of chloroform poisoning. Acute infectious jaundice may cause a widespread destruction of the liver, and Costa and Troisier[5] report necropsies on two cases which died during an epidemic with liver findings indistinguishable from acute yellow atrophy. A recent case recorded by Bates[6] did not show such marked changes, but there were central necroses with hæmorrhage and "an increased amount of fibrous connective tissue rather rich in collagen fibrils about the portal areas in all sections." That the usual case of acute catarrhal jaundice may be in fact a mild form of infectious jaundice is asserted by Costa and Troisier, and implied by Klemperer, Killian, and Heyd.[7] The latter

distinguish one type of catarrhal jaundice as due to degeneration and multiple necroses of the liver probably hæmatogenous in origin.

FIG. 6.—Toxic cirrhosis. This shows the deep scars and nodular surface, and emphasizes the irregular distribution of the hyperplastic nodules. Photograph from a liver in the Pathological Museum of the Montreal General Hospital.

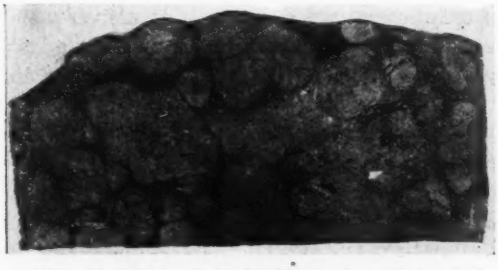

FIG. 7.—Toxic cirrhosis. The cut surface of the liver shown in Fig. 6. The adenomatoid hyperplasia is evident, and the wide bands of fibrous tissue from which the parenchyma has disappeared are shown.

FIG. 8.—*Case 4.*—Alcoholic cirrhosis. The tough fibrotic character of the liver is shown. Nodules are small, and in places the capsule is comparatively smooth.

Considerable experimental work has been done, mostly with chloroform, by Opie,[8] Jaffé,[9] and others, most recently by De Zalka,[10] in attempts to produce cirrhosis of the liver in rabbits. The literature is given by De Zalka. Comparatively large doses of chloroform produce acute necroses of the liver; smaller repeated doses produce less necrosis, but some fibrous tissue changes and a shrinking of the liver.

It seems to be well established, therefore, that clinically and experimentally a subacute necrotizing hepatitis may develop into cirrhosis of the liver. The difficulty is in recognizing these cases, and in distinguishing them from those with cirrhosis assumed to be caused by alcohol. This lack of clinical and pathological distinction between the two types has been largely responsible for the repudiation of alcohol as a cause of cirrhosis of the liver.

The following case is selected as typical of the so-called alcoholic cirrhosis.

CASE 4

J. C., a man aged 69, entered the Montreal General Hospital, service of Dr. C. A. Peter, in December, 1926, and died a month later. He had been in fair health until about two months before admission. He had always drunk as much alcohol as he could get in whatever form it happened to be available. The first sign of illness had been a gradual swelling of the abdomen. This became progressive, and slight jaundice appeared. He was tapped several times and large amounts of liquid removed. He died after a known duration of three months.

Necropsy (A-27-21) showed marked ascites, a large spleen, hæmorrhage into the gastro-intestinal tract, and a liver weighing 1530 grammes. The liver was brownish in colour, and nodular. The nodules were unevenly distributed over the surface, and the largest was about 3 mm. in diameter. They were raised very little above the surface, and there were numerous patches where the surface of the liver was smooth. (Fig. 8). The edges were somewhat rounded, and in spite of the normal weight, the liver was distinctly decreased in size. The cut surface showed a brownish yellow discolouration, and there were numerous small accumulations of liver tissue in a fibrous tissue stroma. The gall bladder and ducts were free from infection, and were patent.

FIG. 9.—*Case 4.*—Alcoholic cirrhosis. The cut surface of the liver shows rather uniform fibrosis, with wide portal spaces and moderate hyperplasia of liver lobules. Compare with Fig. 7.

Microscopically, there was moderate portal fibrosis and bile duct proliferation, with evidence of active fibroblastic reaction. (Fig. 10). The liver lobules were considerably distorted; some were larger than normal; others smaller. There were small groups of liver cells caught in the fibrous tissue network of the portal areas, and these were undergoing hyaline degeneration. A few liver cells around the periphery of some of the lobules contained the hyaline masses described by Mallory as characteristic of alcoholic cirrhosis. (Fig. 11).

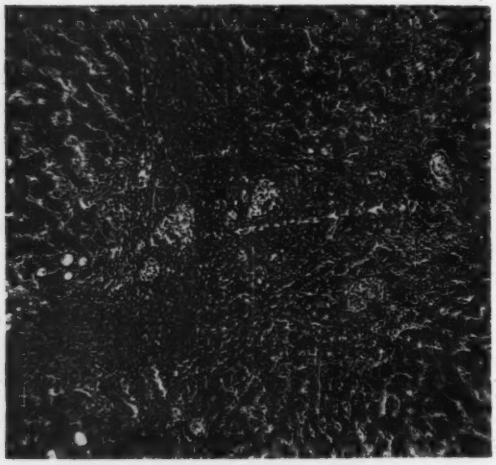

FIG. 10.—*Case 4.*—Alcoholic cirrhosis. The comparatively regular portal distributions of the fibrous tissue is shown. Not all alcoholic cirrhoses are as regular as this, but as a rule the fibrosis follows the anatomical outline of the lobule. Photomicrograph x 80.

It will be noted that this liver was of normal weight, and that the volume was not decreased to the same degree as in the preceding cases. Also that there was less distortion than in the toxic cirrhosis liver, and that the capsule in many places was smooth. Clinically the ascites was the most marked feature. Jaundice was slight and late, and pain was absent.

It is seen from the few cases recorded here, and from those of Milne,[2] and Pratt,[4] that there is a decided difference both clinically and pathologically between toxic cirrhosis and alcoholic cirrhosis of the liver. The former have in practically all cases a history of a previous attack of jaundice, or of disease referable to the liver. There may or may not be fever associated with this, but there is frequently pain (most often in the liver region) and nausea and vomiting. This attack may be mild and evanescent, or it may be severe and progressive. Many have recurring attacks of jaundice, and a fair proportion have been operated upon for a suspected common duct stone. The condition frequently occurs in the young, even in children.

Pathologically the livers are always small; they weigh, as a rule, below 1,000 grammes. In one of Pratt's cases it weighed 620 grammes. The liver, from the nature of the condition has always been small, never showing a stage of hypertrophy; but remarkable nodular hyperplasia occurs, and these large irregular nodules serve as a differentiating feature. (Figs. 7 and 9). There is more distortion than in the alcoholic liver, and microscopically the fibrosis is less regular.

The alcoholic liver is likely to be of approximately normal weight (from 1200 to 1800 grammes). It has a nodular surface, but because of less adenomatous hyperplasia, the nodules are small. Much of the liver surface may be smooth, and it is not uncommon to find a definite and severe cirrhosis in a liver which externally is regular in shape, and has a comparatively smooth surface. Histologically the cirrhosis is portal in distribution, and as a rule the original lobular architecture of the liver can be made out. Degenerating liver cells are present in many, but it is of a hyaline nature, and in some cases, not all, the large colloid or hyaline droplets described by Mallory may be found in degenerating cells. (Fig. 11). The

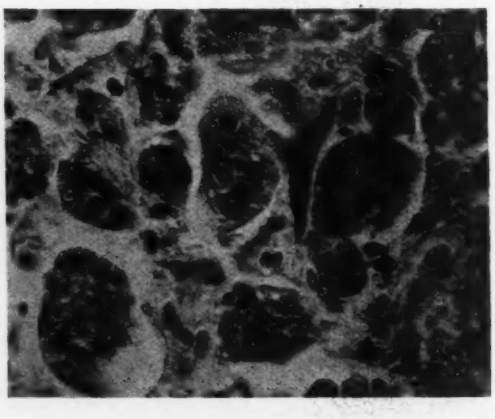

FIG. 11.—Alcoholic cirrhosis. Masses of hyaline material in swollen degenerating liver cells. This is said by Mallory to be typical of alcoholic cirrhosis. Photomicrograph x 800.

clinical picture is well known. Comparatively there is less jaundice; in a good proportion of cases it is absent. The symptoms are practically

all referable to and can be accounted for by portal obstruction.

Summary

A series of cases are recorded which show the development both clinically and pathologically of the condition known as acute yellow atrophy of the liver into definite cirrhosis of the liver. This type of cirrhosis, called toxic cirrhosis by Mallory, is usually not distinguished from the type called alcoholic cirrhosis. The clinical history of previous attacks of jaundice often with pain, fever, and vomiting, and the finding of a very small greatly distorted liver at necropsy, differentiate the condition from the "alcoholic" type, in which symptoms of portal obstruction, and little or no jaundice form the clinical features, and a larger, less distorted liver with portal fibrosis the pathological characteristics.

The etiology of both is unknown. Toxic cirrhosis is caused by the same substances or organisms which cause acute or subacute yellow atrophy. These may be, in addition to unknown toxins, arsenical preparations or the organisms of infectious jaundice or catarrhal jaundice. The "alcoholic" type may be caused by alcohol. The causes of either may be studied with a much greater degree of intelligence if they are first recognized as separate entities.

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On Paternalism.—We have no quarrel with paternalism, but if paternalism is to be effective, it must be thorough. It must work both ways. If it is right to keep the public away from bad plays, it is just as right to compel the public to attend good plays. There has been, in recent years, an increasing tendency toward paternalism. If it has been found that alcoholic beverages are harmful, steps were immediately taken to prevent all citizens from imbibing such beverages. No particular discrimination was shown. The fact that alcohol might be good for some purposes and bad for others, the fact that wine or beer or whiskey might be poison to some and a tonic to others, was not considered. Morally, alcohol was bad, and so alcohol was banned. Failure to discriminate is not nearly as grave a mistake as failure to see that paternalism is not a negative principle, and that, if carried out conscientiously, it should go much farther. If it is legal to compel a citizen to abstain from whiskey, it is just as legal to compel him to take cod liver oil in such quantities and with such frequency as will enhance his physical value as a member of society. If the law can dictate what the individual may or may not eat or drink, it should be able to dictate what he must eat or drink. And the preferences or distastes of the individual should count for nothing. Morally and esthetically, the same principle should hold good. It is a one-sided law which compels the citizen from staying away from the baseball field on Sunday and does not compel him to attend church services. And it is a one-sided law which prevents a man from attending a performance of "The Captive" and does not compel him to witness a performance of "Abie's Irish Rose" or some dramatic success equally uplifting and of marked literary value.—*American Medicine*, March, 1927.

On Medical Education.—The training of a general practitioner is the real function of the medical college, and the general practitioner should not be made to feel a complete inferiority in his vocation. He must appreciate that there are some things in medicine that can be done without being a specialist. The general practitioner does have to learn in college, pathology, therapeutics, general medicine, general surgery, obstetrics, gynæcology, pædiatrics, and something about public health, but such knowledge should enable him to have a confidence in his ability to practice medicine after his practical experience as a hospital interne. The specialist-teacher reminds one of the definition of a specialist as one, "who learns more and more about less and less." After all, the general practitioner is able to take care of probably 90 per cent of all ailments that come to his attention.—*American Medicine*, March, 1927.

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CUTANEOUS REACTIONS TO FLAX AND LINEN IN FIVE CASES OF BRONCHIAL ASTHMA AND TWO OF HAY-FEVER, WITH POOR RESULTS FROM SPECIFIC TREATMENT

By Daniel Nicholson, M.D., M.R.C.P. (Lond.)

Assistant Professor of Pathology, University of Manitoba

Assistant in Pathology, Winnipeg General Hospital

SEVEN cutaneous reactions to flax and linen were discovered in testing 158 patients with a series of from 125 to 150 proteins. These reactions would have been missed with a small series of tests. The cutaneous scratch was used for testing and the reactions were all very marked. They were equally marked when a small amount of linseed meal, dissolved in a drop of deci-normal sodium hydroxide was rubbed into a scratch. One only of these cases, a farmer, volunteered the information that he was hypersensitive to flax.

Case 1

H. H. referred by Dr. A. M. Campbell on September 30, 1922, was a young man of 28 who had suffered from very severe attacks of asthma since he was 5 years of age. When he was free from attacks he worked in a jewellery store. In 1911 he was free from asthma for one and a half years. In 1914 he had a severe attack of hives after eating fruit. The attacks of asthma were worse at night, occurred on an average about every fortnight and lasted several days. In the interval he would be entirely well, could take violent exercise and had a splendid physique. The attacks were worse in the fall and spring, although they might appear at any season and were aggravated by frosty air. He was certain that street dust provoked an attack, and thought the eating of fish, eggs, potatoes, vegetables and coffee made him worse. His father and a paternal uncle had asthma. Several nasal operations had been done.

Protein sensitization tests showed the following positive reactions: flaxseed ++++, chicken feathers +++, silk ?, wheat ?, peach +, plum +, strawberry +, rye +, daisy ?, orchard grass ?. The offending substances were removed from his diet and surroundings but the attacks continued with their usual severity. After a month's trial of the above, desensitization by protein injections of flax and chicken feathers was tried. The first dose was 0.1 c.c. of a 1:50,000 solution. Little or no reaction occurred but after the third dose which was increased according to schedule a most violent anaphylactic attack occurred. It began with tingling of the ears and extremities. Later there was almost total suffocation, cyanosis and a drop in the blood pressure. Ten minims of 1:1,000 adrenalin were immediately given hypodermically and the attack passed off in a few minutes. Both the patient and Dr. Campbell were so alarmed that they did not wish to try any further injections. This patient was last heard from 2 years later and still had attacks of asthma as severe as ever.

Case 2

A. H., paperhanger, 27 years of age, was tested out on December 12, 1922. He had suffered from asthma for 21 years. The attacks were frequent and severe from December to March but never occurred in summer. Frosty air, exertion or a bronchitis provoked attacks. He had had an antrum washed out 5 years before and the asthma was less severe for a year following it. The use of certain types of bristle brushes provoked severe attacks. A slight eczema was present in childhood. This lesion still occurs between his fingers in winter. A maternal grandmother was the only relative who suffered from asthma.

Protein sensitization tests showed a very marked reaction to flax only. On questioning him after the test he remembered having an unusually severe attack of asthma after eating "Roman meal", a breakfast food which contains linseed. Desensitization was diligently carried out over a period of 4 months. The first injection of 0.1 c.c. of 1:10,000 produced a very severe attack of asthma. A more dilute solution was used for a while and the amount gradually increased. At times slight attacks of asthma occurred and the dose would be decreased. After 4 months' treatment the injection of 0.8 c.c. of 1:15,000 would produce a very slight asthma. He thought his asthma was slightly less troublesome than before treatment. The dermatitis between his digits resolved. Two years later he said he still had asthma in cold weather and on exertion but it was of a different character and somewhat less severe than what he had suffered before the injections. The diameter of the wheal produced by flax protein rubbed into a skin scratch was three-quarters of the one which occurred during the original test before treatment was begun.

Case 3

Mrs. E. W. M., 35 years of age referred by Dr. S. W. Prowse on January 19, 1923, for protein sensitization tests. This patient had suffered from rhinitis and hay-fever for 20 years. It was worse in August but extended over most of the summer. Although present day and night it was worse in the morning. It was usually more severe in Winnipeg than at the Pacific coast. The presence of horses, the burning of incense, picking flowers or the inhalation of house dust would provoke an attack of sneezing. A niece is the only relative having asthma. Protein sensitization tests showed the following positive reactions: flaxseed ++++, horsehair ++++, orchard grass ++, rye ++, daisy +. Later intradermal tests

showed the following reactions as illustrated in Fig. 1, flaxseed extract 3.5 cm. in diameter; new linen extract 3 cm. in diameter; old linen extract 1.6 cm. in diameter; silk extract 0:5 cm. in diameter. About an hour later

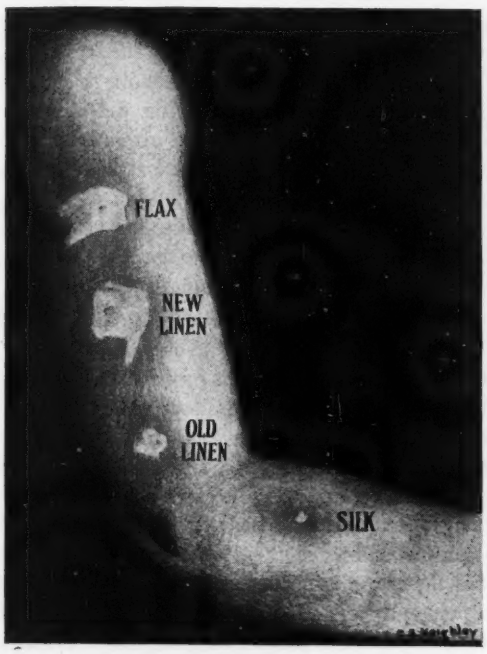

FIG. 1.—Cutaneous reactions to intradermal injections in Case 3.

a severe attack of sneezing developed. No treatment was undertaken at that time, but the following spring a mixture of equal parts of flaxseed, horsehair, orchard grass and rye pollen was prepared and injections given. This patient was seen March, 1926, and said that she obtained a *fair* degree of benefit from two courses of pre-seasonal treatment.

CASE 4

Miss J. C., 35 years of age, a nurse, referred by Dr. George Fletcher on April 19, 1923. For the past 11 months she had had violent attacks of sneezing and lachrymation almost every morning, which came on after she had visited the store room. Opening a package of Lux would provoke a very severe sneezing attack. Dr. Fletcher's report of rhinological examination was negative save for a typical hay-fever mucous membrane. Protein sensitization tests showed the following positive reactions: flaxseed ++++, cheese ?, chamois +. After 4 injections of the flax protein starting with 0.1 c.c. of 1:10,000 the attacks of sneezing ceased and have not returned up to January, 1926. I did not have an opportunity of testing out the cutaneous reaction to flax after injections but judging from the result in Case 2 they would be unchanged. Her only complaint is several attacks of "colds in the head" each winter.

CASE 5

C. B., 58 years of age referred by Dr. Campbell McArthur on May 8, 1923. This patient suffered from asthma for a year. It had been more severe for the past 6 months. Attacks frequently came on any time from 4 in the afternoon to midnight. Walking in the cold air made him worse. Ten years ago while in Toronto he had some slight attacks of asthma. There was no important family history. Protein sensitization tests showed a very marked reaction to flaxseed only. As treatment, a 1:1,000 solution was made up and given by mouth starting with one minim in water three times daily after meals and increasing every third day by 1 minim. He took this treatment over a period of 3 months but noticed no change in his attacks of asthma. They are intermittent and still occur in about the same frequency and severity as before treatment.

CASE 6

J. S., a farmer 35 years of age was referred by Dr. A. J. Burridge on February 8, 1926,, for protein tests. He suffered from asthma of a very severe type for 17 years. Two or 3 attacks occurred every week. Before the attacks he would have premonitory drowsiness early in the afternoon with attacks of sneezing and suffusion. At night he would have intense dyspnœa during which time he could feel a rattling in his chest. Towards morning the attacks would wear off. The severity of the attack could be very much lessened by taking a draught of magnesium sulphate. When questioned regarding the causes he stated the following points:

1. If he is in the house when it is being swept he has a violent attack of sneezing and will have asthma that night.
2. Cleaning or working with grain will produce an attack. *Threshing flax is by far the worst offender.*
3. If he grooms a horse a violent attack of sneezing occurs followed by asthma. Even harnessing a horse may bring this on.
4. His asthma is much worse in the winter time when he is exposed to the cold winds. He is troubled very little in the summer except during haymaking time.
5. Ten years ago he left his farm and worked on the railroad for a winter. During this time he was entirely free from asthma. No special food brought on an attack.

Rhinological examination by Dr. George Fletcher showed clear antra, small polypi in middle meatus which did not embarrass the breathing or seem to exert sufficient influence of the chest to justify surgical procedures. The tonsils which were septic were removed under local anæsthetic. Otherwise physical examination was negative. His blood calcium was 11.6 mgm. per 100 c.c. by Kramer and Tisdall's method.

Protein sensitization tests showed the following positive reactions: flaxseed +++, buckwheat ++, doghair +++, horsehair ++++, cowhair ++++, goose feathers +. Extracts of the sweepings from his own house gave no cutaneous reaction. A mixture of 1:10,000 each of flax, dog, horse and cow hair and goose feathers was prepared for his treatment. A drop of this mixture in a scratch on his arm produced a large urticarial wheal. A 1:100,000 solution was prepared His reaction to this solution in a scratch was scarcely noticeable so he was given 0.1 c.c. subcutaneously. The amount of the injection was slowly increased every second day. After the 0.4 c.c. dose of 1:100,000 he had slight asthma. The dose was decreased and no reactions have developed since. He had no attacks of asthma over a period of a month while in hospital, and he would have taken injections in increasing doses over a period of about 6 months but one week after returning to his farm he died of a virulent pneumonia, following exposure to cold.

CASE 7

N. W., a boy 4 years of age was tested out on April 6, 1927. He has had asthma for the past 2 years. At the age of 3 months he developed severe eczema which

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lasted until the asthma appeared. He has 2 or 3 severe attacks each week, usually at night although his chest is never clear. He was wholly breast fed until he was 9 months old. If he eats chicken, veal, salmon, sardine, brown bread, or egg he may vomit or have an attack of hives or asthma. Severe spasms occur when he is riding in the country in July. His father is a cattle buyer in Saskatchewan and the boy is better since coming to Winnipeg.

Physical examination was entirely negative except for the asthmatic râles in the chest. Protein sensitization tests showed positive cutaneous reactions as follows: flax +++, pyrethrum ++++, glue ++. Foods: cabbage +++, celery +, pea +, potato ++, string bean +, tomato +++, turnip +, prune +, barley ++++, wheat +++, veal +, chicken +, salmon +++, sardine ++, whitefish ++++, egg +++. Animal emanations: horsehair ++++, cowhair +, duck feathers +. Pollens: June grass +++, timothy +, prairie sage ++.

Foods showing positive reactions are being excluded from his diet and his parents are advised to keep him from emanations to which he shows a reaction. Not sufficient time has elapsed to know the result. Should his symptoms persist a course of desensitization with horsehair and June grass will be tried.

Comment.—All these patients were extremely sensitive to flax. A protein solution of 1 in 1,000 produced an urticarial wheal one-quarter inch in diameter in all the cases but number 5. An initial injection of 1/2 c.c. of 1:100,000 produced a violent attack of asthma in all of them, thus demonstrating a relationship between the flax protein and the asthma.

Cases 1 and 2 suffered from very severe asthma and were both of over 20 years' standing so that they would naturally be difficult to help. On the other hand both, apart from their asthma, were entirely healthy, which is a necessary factor for the successful treatment by desensitization.

Case 2 offered the best study of the effects of desensitization because he was sensitive only to flax and he took injections over a long period of time. With him desensitization was a very slow process. Following treatment there was a small but definite decrease in the size of the wheal produced by flax rubbed into a skin scratch. It is very difficult to judge the degree of clinical improvement in a patient who is not entirely cured. If a form of therapy makes a favourable appeal to the patient's imagination he will claim benefit from it when there is no actual change in his physical condition. At other times, if he expects to be cured and a slight asthma remains he may state that he is no better because the memories of the laborious distress of past attacks fade, while the discomfort of the present is a much more forceful reminder. Although not certain about it, I think this patient's asthmatic attacks are less severe than before treatment. Case 1 was the most discouraging of the series. He was very intelligent and was willing to co-operate in every detail. The reactions were of the type from which one could expect good results by removing offending substances. This did not have any influence on the course of his asthma whatever. A dangerous anaphylactic attack occurred after the third injection so that no benefit was obtained from desensitization by injections. Results of this type discourage one in doing protein sensitization tests at all.

The result in Case 4 was quite unexpected. Hay-fever responds more favourably to desensitization than does asthma and in this patient the disease had been of comparatively short duration. On the other hand in the course of hay-fever attacks there is much that cannot be explained, as, *e.g.*, why during a hay-fever season one patient is free from symptoms in the forenoon but suffers in the afternoon, while another has the worst symptoms early in the morning; a person hypersensitive to June grass pollen and suffering intense nasal irritation, may suddenly for several days be free of symptoms without treatment of any kind, while the air is still polluted with June grass pollen. In view of this and the slow and tedious process of desensitization of Case 2, I cannot feel certain that the treatment had very much to do with the spectacular recovery of this case.

The most disturbing symptoms in Case 3 were in the pollen season and the use of a vaccine containing all the substances to which she was sensitive, including the orchard grass pollen, gave a partial relief.

Conclusions

1. Hypersensitiveness to flax and linen occurred in 4.4 per cent of cases in a series of 158. A dilution of 1:1,000 of the protein in a skin scratch produced a wheal. Injections of 1/2 c.c. of 1:100,000 produced asthma.

2. Four of the patients were hypersensitive to many substances such as animal hairs, feathers, fruit and pollens.

3. Avoiding flax and linen did not in any case relieve the asthma.

4. Treatment with gradually increasing doses of flax was disappointing.

CYST OF THE EXTERNAL SEMILUNAR CARTILAGE OF THE KNEE

With Report of a Case

By J. Appleton Nutter, M.D., and Clarence L. Blew, B.S., M.D.

Montreal

CYST of the external semilunar cartilage of the knee is rather uncommon. Since 1904 there have been only twenty cases reported in the literature. The average age of occurrence is between 20 and 25 but cases are on record as young as 16 and as old as 40 and 55 years. Males predominate in the proportion of about three to one.

There is a history of trauma obtainable, usually of a mild type, in about 45 per cent of cases. Following this (weeks or months) a swelling appears, and gradually enlarges to its maximum size, which varies with each case, and finally remains stationary. The symptoms, however, persist; these are swelling at the site of the external semilunar cartilage, and localized pain and tenderness over the same area, aggravated on movement, especially on full extension and full flexion.

In size, the cyst varies from that of a pea to a nut; it is sessile in type, sometimes lengthened in the transverse plane, moving with the meniscus and disappearing on flexion. It occurs in the mid-portion of the cartilage and is quite near the external lateral ligament.

Microscopically, the cyst is intra-capsular, multilocular, filled with a gelatinous mucoid substance, and is without an endothelial or epithelial lining, (with the exception of Ollerenshaw's[1] case) and presents signs of an inflammatory reaction in the surrounding tissues.

The causative factor is much disputed and many theories have been advanced. They have been attributed to infection, traumatism, and chronic inflammation, and have also been regarded as congenital or due to some vascular defect.

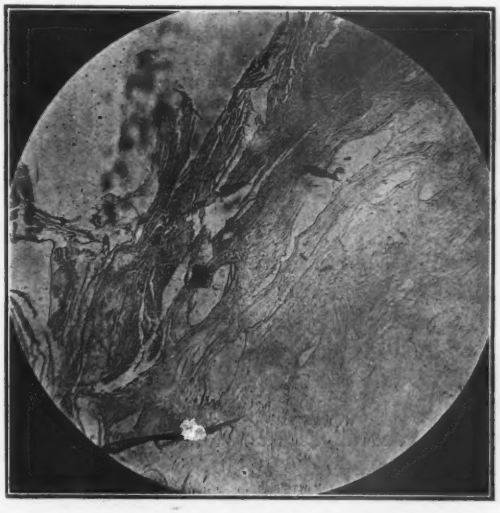
The only treatment is surgical removal. Recurrences are noted only when the external cartilage is not removed entirely.

Report of a Case

F. W., aged 16, white, male, was admitted to the Orthopædic Outpatient Department on March 1, 1926, complaining of pain on the lateral side of the right knee joint. One year previously he had been kicked on the knee while playing football, with consequent disablement for two or three days, but leaving him free from discomfort following that time. Until four weeks before coming to the hospital he had had no trouble. He first noticed a progressively tender area, at the outer side of the right knee joint, aggravated on flexing or extending the knee and while walking. His occupation was that of a plumber's helper, and he was forced to assume a kneeling position most of the time. The personal history was otherwise negative.

On examination there was found a small tense swelling in the region of the external cartilage, about the size of a small walnut, along the joint line, in front of the external lateral ligament. The swelling was not attached to the skin, and appeared to end or taper out in the joint space. There was no joint effusion and no limitation of movement. He did, however, have pain on full extension and flexion.

The physical examination was negative except for the local condition. There was no Wassermann reaction, and the x-ray examination was negative. A needle was inserted in this swelling but nothing was obtained.



One week later the patient was operated upon. The whole of the external cartilage was removed as the cyst was found to involve the mid-portion of the cartilage. The wound healed by first intention and the patient was sent out with a knee cage splint. Ten months after, January, 1927, he was found to have almost com-

plete flexion of the knee without pain and he says he has improved generally and is without discomfort.

The tumour measured in all 4 x 3 cm., was polycystic in character and contained a pinkish gelatinous material.

Microscopical examination of the specimen revealed the following: "A section through the greatest diameter of the mass shows dense fibrous tissue, and at one edge a thin line of imperfectly formed cartilage. There are numerous small cysts present, lined by fibrous tissue. No mesothelium can be found either in the cysts or on the surface of the mass. The photomicrograph shows a few of the numerous small cysts present, with the dense hyaline character of the fibrous tissue."

This case is undoubtedly one of traumatic origin, and corresponds in practially every way to those previously described by other writers. We are inclined to the view of Allison and O'Connor[2] that these cysts are the result of a degenerative process, caused by an interference with the blood supply; the exciting cause being a non-lacerating injury. In this case it was a mild traumatic injury.

Our thanks are due to Dr. C. L. Conner, Pathologist to the Montreal General Hospital for the microphotograph, and the report on the microscopical findings in this case.

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VINCENT'S DISEASE*

INFECTION DUE TO FUSOSPIRILLARY INVASION.

BY F. T. CADHAM, M.D.

Winnipeg

THE downhill road to serious debility too often is worn smooth by the unobserved attacks of mild infections. As a rule, Vincent's disease is considered to be a mild infection. That the pathogenicity of the associated organisms is limited to a local ulceration is a current belief, and the milder types of invasion are frequently overlooked. Investigation discloses a high incidence of Vincent's gingivitis. So prevalent is this disease that it becomes an important detrimental factor in individual and in community health.

Vincent's organisms apparently cause an infection of the gums, mouth, tonsils, pharynx, larynx and middle ear. On occasions they give rise to bronchitis, to pneumonia, meningitis, appendicitis and enteritis. Also, fusospirillary invasion has been noted as a complication of wounds, sores and, occasionally, of vaccination pustules, while cases have been reported where the organisms excited a serious infection of the skin following injuries by the teeth,—accidental or intentional man-bite. They may also cause ulceration of the labia or prepuce.

* From the Department of Bacteriology, University of Manitoba, Medical School.

In this, as in many other conditions, we are perplexed with the problem, whether to name a disease by its location, or by the etiological factor. The original and familiar term, "Vincent's angina," is limited, commonly, to those conditions in which there occurs an ulceration of the throat or tonsils due to Vincent's organisms. Barker and Miller[1] in a comprehensive survey of an infection due to fusospirillary invasion are inclined to agree with Bowman, that we should use the term, "Vincent's disease," for all infections associated with these organisms, no matter where located. The eponymic name appears logical.

HISTORY

That the principal type of this disease existed long before the discovery of the causative bacteria may be judged by a perusal of works on dentistry written by the shrewd clinical observers of earlier years. Spooner,[2] in 1836, described such a condition of the gums. He says: "It attacks persons of all ages and conditions, frequently the healthy and robust. It is often very insidious and may progress for a long time without being discovered by the pa-

tient. The gums become turgid, spongy and painful, bleeding on the slightest touch. The causes of this species of disease are local." He also adds the interesting observation, that this condition "frequently leads on to the formation of pus and the loosening and loss of teeth"—to the clinical picture of what is known to-day as pyorrhœa alveolaris.

Although reference to the associated organisms had been made by Miller[3] in 1883, by Plaut[4] in 1894, it remained for Vincent,[5] in a series of articles beginning in 1896, to draw attention to fusospirillary infection as a clinical entity. The disease took on added interest during the great war when Bowman,[6] McKinstry[7] and others early demonstrated the association of Vincent's organisms with the lesions found in the disease known as trench mouth. This condition was widespread among the troops, and although classed as a minor ailment, ranked high as a cause of disability.

Incidence

Of late years, probably as an aftermath of the epidemic among the troops, the disease has become prevalent in the community, but since it occurs commonly as a chronic gingivitis the condition is seldom recognized.

Our investigations here, extending over 3 years, showed that among 526 medical students, nurses and others, a Vincent's infection of the gums in some form was present in 47, an average of over 9 per cent; this, too, in a class of persons who may be expected to, and do, practise oral hygiene better than the average individual. An examination of the mouths of 100 school children showed the infection present in five, while on a further examination of the throats of 564 school children the organisms were found in the pharynx of but one. Of 300 patients, principally in the hospital public wards, 26 per cent showed fusospirillary invasion of the gums. It frequently complicates nephritis, arthritis, diabetes and hypertension, and it is almost a constant finding in hospital patients with long standing debilitating diseases such as pernicious anæmia and cancer. The gingivitis is peculiarly associated with leukæmia; four such patients disclosed the characteristic lesions of the gums, and one of these, a child aged 7 years, was eventually overwhelmed with fusospirillary gangrene of the mouth and throat.

These investigations indicate that although Vincent's angina is the type of disease for which a patient usually seeks relief, and one which clinically impresses itself on the physician, yet it is a rare condition compared to a Vincent's gingivitis.

Fortunately, Vincent's pneumonia is also a rare condition, though Vincent[8] and others associate a hæmorrhagic bronchitis, which occasionally develops into a pneumonia, with fusospirillary infection. A few of these cases were noted in the military hospitals during the war. In the last 3,000 specimens of sputum examined at the Provincial Laboratory, Winnipeg, Vincent's organisms in numbers that would indicate an infection of the bronchi or lungs were observed in but a single instance.

Contagion

Experience with trench mouth in the army would indicate that the condition is contagious. Ford[9] has suggested that the high incidence of this condition among soldiers was due to the frequent use of mercurial cathartics with a supposed consequent lowering of the vitality of the gums. During the war I had the opportunity of investigating a large number of these cases, both as regards the etiology and the effect of treatment. No evidence was forthcoming at the time that the use of the well-known rhubarb, colocynth and calomel pill was extensive enough to prove a contributing factor to the infection. However, the condition occurred often in those undergoing mercurial treatment for syphilis, as also in wounded patients who had been subjected to the intensive use of bismuth iodide paste. One is inclined to attribute the prevalence of trench mouth in troops on service to the opportunity for infection, and for contagion due to war conditions, such as lack of facilities for oral hygiene, a limited water supply for the cleansing of mess kits, etc. Bowman has recorded instances when the infection took place during dental treatment. A Vincent's gingivitis is common in members of the same family.

Immunity

Without treatment Vincent's ulceration of the throat is almost always self-limited; moreover, it rarely recurs. However, Vincent's gingivitis frequently lasts over a long period and no active degree of resistance appears to be acquired. A

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patient with such a condition may, at any time, develop an ulceration of the pharynx. In this event the outcome is instructive; the gingivitis improves coincident with the healing of the pharyngeal ulcer. Does the body require a more extensive and deep-seated infection in order to develop the required immunity? If so, the use of a specific vaccine offers a fruitful field for investigation.

Etiology

Two organisms are found associated in these infections: a bacillus fusiformis and a spirillum or spirochete. They are believed to be symbiotic. The non-motile fusiform bacilli vary in length from 2 to 12 microns, and have a thickness of from 0.5 to 1 micron. Widest in the centre they taper evenly towards the ends; sometimes they are slightly curved. They stain readily, frequently presenting a banded appearance and while, as a rule, they are negative to the Gram stain this is not found to be a constant characteristic. The slender spirilla vary from 3 to 15 microns in length and have from two to several wide, shallow curvatures. They do not stain as readily as the bacilli. The more marked the clinical condition the more numerous are these spirochetes.

Both organisms are anærobic but many bacteriologists have difficulty in obtaining the spirilla in culture. Tunnicliff's[10] work would indicate that the two forms are but stages in the life history of the same organism. I have occasionally observed that the fusiform bacilli, both in culture and smears from the ulcers, show curved slender forms, that, though segmented, are pale in appearance and resemble the spirochete.

It has been argued that Vincent's organisms may be secondary invaders, that they are merely saphrophytes and that they are found in many ulcerative conditions. It is also pointed out that they are obtained in culture with difficulty and, as yet, no one has succeeded in reproducing the disease with such cultures. Are they then pathogenic? Experimentally a gangrenous ulcer may be produced in animals by the inoculation of material taken direct from an active ulcer. The evidence shows that the disease is contagious, also the organisms are consistently found associated with well-defined lesions and the more characteristic and severe the lesions, the greater the number of fusospirillary bacteria present. Furthermore, as the ulcer heals the organisms disappear. If we would accept another bacterial cause it would need to be an, as yet, unidentified bacterium or an ultra-microscopic one, for no known organisms except Vincent's are to be constantly found in these special ulcerations.

Vincent's disease may be diagnosed readily by the laboratory worker. A smear from the affected tissues stained with gentian violet suffices. The picture is a striking one, other organisms are absent or few in number, the fusospirillary forms crowd the field. The diagnosis of the suspected ulcers generally lies between Vincent's, syphilis, or diphtheria. Smears from an ulcer due to syphilis show, characteristically, few organisms; besides, special stains are required to define the treponema pallidum, and its delicate structure is not to be confounded with the coarser spirillum of Vincent's disease. Moreover, in Vincent's disease the Wassermann is negative. In this respect I have been able to repeat the work of Taylor and McKinstry,[11] of 50 cases of Vincent's disease, selected at random, 49 gave a negative Wassermann while the one patient with the positive test admitted syphilitic infection. However, it must be remembered that this disease may complicate syphilis or other infections.

Stained smears from a diphtheria ulcer present a mixed picture: cocci are abundant, frequently other organisms are present and the diphtheria bacilli may be difficult to define.

Pathology

A necrosis of the tissues is caused by Vincent's organisms, a yellowish white membrane being formed over the ulcerated area. This membrane on section shows the superficial layer to be composed of fusiform bacilli, the middle layer of these bacilli in palisade arrangement together with some spirilla and the deepest layer shows a majority of spirillary forms. Tunnicliff[12] has demonstrated that the spirilla lead the advance in the invasion of the normal tissues. Leukocytic infiltration is scanty and pus is not formed until late in the course of the disease. As it is unusual to see the organisms within a phagocyte, evidently

they resist phagocytosis. The necrosis may be extensive: Hennessy and Fletcher[13] report a case, an infection of the thumb following a man-bite, in which the necrosis extended to the bones of the hand, necessitating amputation.

Symptoms

The disease is both acute and chronic. The mouth furnishes the site of selection for the life of the organisms, and gingivitis is by far the most frequent type observed. The onset is insidious. It may occur in people with an apparently healthy buccal mucosa, but is more often found in those with decaying teeth or partial dentures, or in those in whom the vitality of the gums has been lowered by injury, disease or the use of drugs. On occasions it follows the extraction of teeth.

The first symptom noticed by the patient is a bleeding of the gums and some tenderness. Although the infection may arise from a single ulcerated area the spread is so rapid that within two days the gums present a spongy, swollen appearance and, as a rule, the condition is uniform throughout. The affected tissue develops a peculiar dusky hue with punctate light areas, and a thin white membrane forms along the gingival margin. This margin early everts from the teeth. If the disease progresses past this stage ulceration takes place about the circumference of the teeth and, as Woods[14] points out, the interdental papillæ are affected; deep pockets are formed and even the crest of the alveolus may be involved. Frequently ulcers are found posterior to the last molars. At this stage pressure fails to elicit pus but pushes up from the gums a yellowish white membrane, while blood exudes freely on the slightest irritation. Pus appears with the supervention of an added infection from other organisms. As a rule the disease is limited to the gums but a general stomatitis may intervene. Extension to the tonsils occurs in approximately one case in 30. Frequently the submental and sublingual glands are enlarged. The saliva is acid in reaction. If untreated, or if the patient fails to develop the required immunity the gingivitis becomes chronic, pus is formed, considerable destruction of the gum tissue takes place and the teeth become loose. All types from the severely acute to the mild and chronic are to be encountered.

Vincent's ulceration of the throat is seen only as an acute condition even though it follows a chronic gingivitis. It may occur during the course of another disease and has been known to follow tonsillectomy. As a rule a crater ulcer of one tonsil is seen, but the condition also may be noted on both tonsils, on the palate or in the pharynx. The irregular-shaped ulcer lacks the intense surrounding congested area of the diphtheritic or streptococcic infections. Covering the necrosed tissue is a thick yellowish white membrane which strips easily and blood exudes freely from the exposed granular surface. A cervical adenitis develops.

The condition is self-limited, the ulcer generally heals within three weeks, but on rare occasions it may extend. One fatal case was recorded in Winnipeg: a physician developed a Vincent's ulceration of the tonsils which, in spite of treatment, eroded through to the carotid. As a rule, fusospirillary infection of wounds, sores, and of the labia and prepuce is also self-limited, although it may progress to an extensive gangrene. Vincent's disease of the bowels may take the form of an ulcerative colitis.

General Symptoms

When the lesions occur in the mouth or the throat the breath is foul; a chronic Vincent's gingivitis frequently underlies a chronic halitosis. Patients with the gingivitis complain of the tender gums, while those with pharyngeal lesions suffer from dysphagia. In these types of the disease many observers report a considerable elevation of temperature, but I have seldom seen an elevation of more than two degrees; occasionally one finds a normal temperature in a patient with a fairly severe acute gingivitis. The pulse is slightly accelerated and some disturbance of digestion takes place following imperfect mastication in the acid saliva.

There is, however, one prominent symptom common to all fusospirillary infections wherever located, and that is depression. The depression is out of proportion to the other constitutional symptoms and is the important factor to be considered when Vincent's complicates, as it frequently does, other diseases.

Treatment

Centuries ago Leeuwenhoek wrote, "a foul mouth is the habitation of numerous animal-

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culæ." He applied his knowledge, frequently cleansed his mouth with hot salt and water, and that wise Dutchman lived to a ripe old age with the aid of sound teeth. We might to-day with profit take thought of his observations. Oral hygiene could be practised with advantage in the prevention of the all too prevalent Vincent's infection. When the disease is established in the mouth or throat, it should be the first principle of treatment. Following that, various preparations for thorough local application may be tried. Bowman's mixture of—Fowler's solution 1 oz., wine of ipecac 1/2 oz., glycerine 1 dram is a valuable remedy when applied with discretion. Silver nitrate, potassium permanganate, and tincture of iodine each have their advocates, while alkaline mouth washes may be used to advantage. Quick relief from a Vincent's gingivitis sometimes follows frequent rinsing of the mouth with a solution of sodium bicarbonate. Woods recommended touching the affected parts with chromic acid for one minute followed immediately with hydrogen peroxide, a method that requires care and should only be practised by the physician or dentist. Jelinek[15] reports cures of ulcerative stomatitis by freezing the gums with ethyl chloride, and using sulpharsphenamin locally or by intramuscular injection; a form of therapy especially applicable to children, which is claimed to have a specific effect.[16] Recently Vincent[17] reports success with the use of a polyvalent anærobic serum in the treatment of gangrene, a method of treatment valuable in fusospirillary gangrene of the lungs.

Since we are dealing with a spirochete, the intravenous use of arsphenamin would appear logical and there is considerable evidence that the treatment has proved successful; but Vincent's disease of the throat may, and occasionally does, occur in patients who are undergoing a course of treatment with this drug. I have seen two such cases, and I have also seen it fail signally to control a general stomatitis, a pharyngeal ulcer and an ulceration of the prepuce due to Vincent's organisms.

It is essential that the teeth be kept in a healthy condition; the populace is overburdened with complicated dental surgery in a brave effort to save unsound or failing teeth. Dentures may be cleansed but the unhealthy mucosa about the weakened foundation of massive bridgework protects and propagates pathogenic bacteria; also, the gums about that insidious enemy of good health, the gold-crowned, devitalized tooth, form an excellent site for the invasion of fusospirillary organisms. A good dentist with a discerning eye for ultimate beneficial constitutional results is an asset in the prevention and treatment of Vincent's gingivitis.

Finally, it is suggested that the perfunctory oral hygiene practised on, and by, the average patient will not control this infection.

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It was Osler who got the statue of Sir Thomas Browne set up in Norwich, and gave a cup to hold his skull. He was also instrumental in getting that skull restored to the grave. Of the *Religio Medici* he said that it—one of the great English classics—"should be in the hands—in the hearts too—of every medical student." "No book," he said elsewhere, "has had so enduring an influence on my life." It was on that occasion he quoted Seneca: "If you are fond of books, you will escape the *ennui* of life. You will neither sigh for evening digusted with the occupations of the day—nor will you live dissatisfied with yourself and unprofitable to others."

ON THE BRONCHOSCOPIC METHOD OF DIAGNOSIS AND TREATMENT OF CERTAIN DISORDERS OF THE LUNGS AND BRONCHI*

A Report of the Method as Used at the Western Hospital Clinic

By A. A. Halliday, M.D.

Toronto

APART from the extraction of foreign bodies the use of the bronchoscope in chest conditions is a comparatively recent advance in medicine, but one need only look over the literature of the past few years to become convinced that this method is a valuable and useful aid in the treatment of lung suppuration and allied conditions.

The object in presenting this paper is to bring before the members of this section the fact that in properly selected cases bronchoscopy, when performed by a trained team, is a safe procedure, and one that may be a real help to many for whom life is now intolerable, or who are hoping to avoid thoracic surgery.

One point, that I wish to bring out early, is that in this work full co-operation of the internist and roentgenologist is required; otherwise, the patient will ultimately suffer, and a commendable procedure fall into disrepute. The indiscriminate use of the bronchoscope is to be condemned. Such use has already resulted in accidents, and it is only after thorough preparation of the patient, and careful consideration by the physician, that bronchoscopy should be resorted to.

At the Toronto Western Hospital during the past 8 months 15 patients have undergone bronchoscopic treatment, and about 100 bronchoscopies have been done. Possibly a short account of the routine would be of interest. Jackson's tubes and instruments have been used throughout, and we have tried to follow as closely as possible the technique developed by him and his co-workers. Each patient is subjected to a complete physical examination of the chest including one by the x-rays. This gives warning of lesions of the heart, large blood vessels and mediastinum. One hour before treatment the patient is given a hypodermic injection of morphine, gr. 1/4, or a tablet containing hyoeine gr. 100; morphine gr. 1/4 and eactine 1/60, and in patients over 16 years of age a freshly prepared solution of cocain (10 per cent) is applied deep enough down in the pharynx to inhibit the function of the superior laryngeal nerve. After the second or third treatment the hypodermic is omitted, and no general anæsthetic is used. The duration of each treatment is about 5 minutes, and up to date only one patient has refused a second bronchoscopy because of the discomfort. Following the first bronchoscopy the patient remains in the hospital 24 hours for observation, but after the second treatment is able to leave within a few hours or less.

In the treatment of pulmonary suppuration and bronchial asthma, for these conditions afford the greatest field at present, the first question we are confronted with is, "In what type of case is bronchoscopy of benefit?" and again, "What are the contra-indications?" No hard and fast rule can be laid down, as our experience to date is too limited, but generally speaking, bronchoscopic treatment is indicated in any case in which the internist wishes to supplement his general measures by improved drainage. This is obtained by bronchoscopic aspiration and medication. This presupposes a patient in fairly good general condition and not too extensive lung involvement. Contra-indications are definite, and as laid down by Jackson are:

"(1) A moribund patient. (2) Laryngeal tuberculosis. (3) Recent profuse hæmorrhage. (4) Organic disease of the heart and great blood vessels. (5) Disease of lung tissue involving one-half or more of

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one lung. Age cannot be considered as a definite contra-indication to bronchoscopy, and generally speaking the contra-indications for its use decrease with the increased skill of the operator, while in less skilled bronchoscopy the indications decrease and the contra-indications increase."

The present treatment of lung suppuration is most varied. It includes postural drainage, rest in bed, vaccines, and surgical procedures such as pneumothorax, lobectomy, and thoracoplasty. The use of one method to the exclusion of others is to be condemned, and bronchoscopic drainage has advanced to such a point that in a certain percentage of cases a definite cure can be hoped for. Other patients are relieved of their distressing symptoms by a localization or limitation of the suppurative condition. In any event nothing has been lost by delay, and the patient has incurred practically no risk by submitting to bronchoscopic treatment.

The success of bronchoscopy in suppurative cases lies in the fact that by aspiration one is able to remove the pus and facilitate drainage by removal of any obstruction which may be present. The obstruction may be simple inflammatory swelling, granulation tissue, or a narrowing of the bronchi. The application of oily substances such as gomenol affords protection to the mucosa from the irritating secretion lying on its surface. One of our cases showed an almost complete blocking of the left lower lobe main bronchus by granulation tissue, and it was most interesting to observe the decrease in the size of the granulations in conjunction with the lessened discharge and improved drainage.

Lukens, in a report of 85 cases treated at the Jefferson Hospital, Philadelphia, states that 26 or 30.5 per cent were cured, and 38 or 44.7 per cent were improved in regard to general condition, lessening of cough and expectoration, and the disappearance of the offensive odour. In 21 cases or 24.7 per cent there was no improvement. Most of these cases were old abscess cases extending over many months or years, and as over 70 per cent were benefited, his results justify bronchoscopy for these unfortunates, many of whom had been unable to take their place in society on account of the foul breath, or were not able to support themselves.

At the Toronto Western Hospital clinic we have only had one case of single lobe abscess, but in it apart from the temporary lessening of the cough and expectoration, the patient derived no benefit from the bronchoscopic treatment. This was due to the fact that the disease was of at least 10 years' duration, the walls of the cavity were fibrosed and no collapse was possible. The interesting point about this case is that the patient came to the clinic labelled "bronchiectasis," after having visited various clinics, and had been on two occasions in a tuberculosis sanatorium for considerable periods. By the use of lipiodol we were able to demonstrate a large abscess in the right lower lobe. Dr. Caulfield has since done a thoracoplasty, and the patient is making a good recovery.

We have treated six cases of bronchiectasis. Of these four showed extensive involvement of long duration of both lower lobes, and apart from the temporary lessening of cough and expectoration, no improvement was noted. The remaining two cases showed involvement of the left lower lobe, and have shown definite improvement. In both, the offensive odour has disappeared, expectoration has been cut down to one-quarter or less of the original amount, cough has lessened, the patients feel better in themselves, and one has gained 6 pounds in the last two months.

There is probably no condition for which more cures have been advanced than that of bronchial asthma. The term itself is meaningless, and in using it I refer to cases which are not of renal or cardiac origin. In a certain percentage of these patients bronchoscopic treatment is encouraging in that the asthmatic attacks can be shortened and recurrence made less frequent. No definite conclusions at present can be drawn as to the ability of bronchoscopy to obtain a cure, but marked improvement and relief has been obtained in many cases.

The theory underlying this form of treatment is that most asthmatics of this type have a tracheo-bronchitis which, to make a broad classification, is either of a suppurative or catarrhal type. The draining of the bronchial tract of the irritating secretion by aspiration, coupled with the injection of a weak solution of cocain and adrenalin into the bronchi, is believed to be the beneficial factor. The treatments are given at

weekly intervals and our experience, and that of others, has been that the acute stage of an attack is no contra-indication for passage of the tubes.

In a series of 21 cases of bronchial asthma Lukens and Moore obtained improvement in 14 cases, and our percentage of improvement in a series of nine cases at the Toronto Western Hospital has been the same, *viz.*, 66 2/3 per cent. Of our three cases which we consider as unimproved two return at irregular intervals for treatment on account of the temporary relief afforded. Of the six improved cases all have undergone prolonged and varied medical treatment, and the interesting factor is that until bronchoscopy was added these measures produced little, if any, results. Five of the cases were taking adrenalin *ad lib.* and an occasional dose of morphine was required to control the situation.

A brief résumé of these cases may be of interest.

1. Mr. L.—Recurring asthmatic attacks for 5 years; 4 to 5 attacks in 24 hours for several weeks; prolonged medical treatment; adrenalin frequently, occasionally morphine; eight bronchoscopic treatments brought him down to one attack per week; patient has left Toronto and gone to Nebraska.

2. Mrs. S.—Recurring attacks since she had influenza in 1918; latterly several attacks daily; confined to bed one-third of the time; has had adrenalin and morphine. Seven bronchoscopies; result, one to two mild attacks per week; she is up doing her own housework.

3. Mr. W.—Two attacks in the past two years; in bed two weeks when seen; has had adrenalin and morphine; was given four treatments and had relief after the first one.

4. Mrs. D.—Attended clinic for months; recurring attacks every winter for several years; received four treatments; chest is now clear.

5. Mr. W.—Two or three attacks per week for nine years, has used adrenalin and morphine; four treatments; result, one slight attack per week.

The last point I wish to touch upon is that of lung mapping by radio-opaque substances, with special reference to the use of lipiodol. As a diagnostic aid this method of localization presents many possibilities, and the bronchoscopic method of instillation in addition to permitting inspection of the air passages and aspiration of secretion, allows the *accurate* instillation of the solution into any desired part of the tracheobronchial tree. If necessary the lipiodol may be removed by aspiration.

By the use of lipiodol it is possible to definitely outline and localize an abscess cavity; in bronchiectasis the degree and extent of the bronchial dilatation can be determined, bronchial stricture can be demonstrated, and foreign bodies either penetrating or aspirating can be localized in relation to the bronchial tree. Lung mapping when combined with the x-ray is undoubtedly of value to the thoracic surgeon in localizing residual lesions after operation, and also in helping him determine whether a case is suitable for thoracoplasty, especially when the ordinary chest plate gives no detailed information regarding the lung condition.

To summarize briefly:

1. Bronchoscopy will only yield the best results when the operator has the full co-operation of the roentgenologist and internist.

2. Bronchoscopy, under local anæsthesia, when performed by a trained team, is a safe procedure in properly selected cases.

3. A certain percentage of lung suppuration cases can be cured by bronchoscopic drainage; a large percentage improved, and most of them given relief from their distressing symptoms.

4. Bronchoscopic drainage and treatment does relieve a certain percentage of asthmatics, especially those with a tracheo-bronchitis.

5. The use of radio-opaque substances is a valuable aid in the diagnosis of lung conditions.

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The Tombs of Illustrious Physicians.—As an echo of the centennial celebration in honour of Laënnec, a committee has been appointed in Paris to collect by subscription a fund with which to provide for the upkeep of the graves and tombs of famous physicians. In the large Père-Lachaise cemetery in Paris, the tombs of medical celebrities are so covered with moss that the names of the deceased can scarcely be deciphered. The various medical associations have agreed to subscribe to an endowment fund which will be used for the purpose cited.

A SHORT TALK ON ORDINARY ULCERS AND NON-PENETRATING WOUNDS OF CORNEA AND THEIR TREATMENT*

By R. Evatt Mathers, M.D., F.A.C.S.

Lecturer in Ophthalmology, Etc., Dalhousie University, Halifax

I DO not propose that this paper shall be anything but a simple dsicussion of non-penetrating wounds of the cornea and ordinary ulcers of the cornea, and their treatment, without reference to any of the rarer forms of the ulceration. I therefore offer no apology for my way of treating the subject. I have chosen this most important subject, not because I can bring forth anything new about corneal ulcers or their treatment, but because the subject interests me and I think there is much neglect of it by the laity and by the general practitioner, especially in the country districts.

Ulcers and non-penetrating wounds of the cornea, by prompt and proper treatment, can, in most cases be brought to a successful termination; whereas if neglected, they may lead very quickly to loss of sight, and maybe to loss of the eye itself. The cornea as you know, is well supplied with nerves and lymph spaces, but in health has no blood vessels. The copious supply of lymph takes the place of these. Being thinner in the centre over the pupil than at the outer circumference, there is more danger of perforation from an ulcer situated centrally than if it be situated near the limbus. Moreover the subsequent scar, if over the pupil, may seriously affect vision, and a scar so placed may necessitate an optical iridectomy.

Ulcers may arise without obvious cause, yet, most cases, on careful injuiry, may be traced to infection, or some slight injury such as a small foreign body or a scratch of the cornea. I have seen a misplaced eyelash cause an abrasion of the cornea followed by serious ulceration.

Disease of the lachrymal sac (dacryocystitis) is a most serious condition if one gets even a slight abrasion of the cornea. The conjunctival sac is at best never free from bacteria, but with such a condition as disease of the tear passages, the eye is flooded with streptococci, pneumococci, etc. A chronic dacryocystitis seems to be a favourite residence of the two former cocci. It is surprising the resistance the healthy cornea has to these germs, but if even the slightest abrasion takes place, death of the corneal tissue results, and we have our ulcer, sometimes small, but at times spreading in a few days to such an alarming extent that the whole cornea may become involved. Iritis with hypopyon develops, and sometimes perforation of the cornea followed by panophthalmitis, and requiring enucleation. If such an ulcer is fortunate enough to heal a dense scar or leucoma results, covering the whole cornea and causing loss of sight and an ugly deformity. If the whole cornea is covered with a scar optical iridectomy is useless, yet it is not uncommon to see people walking about with tear passages diseased and purulent material in their conjunctival sacs, little dreaming of the danger of loss of sight. A person so afflicted may, while walking along the street on a dusty day, get a piece of dirt in the eye; an abrasion follows, then ulceration. All patients with a dacryocystitis should be told of the grave danger they are running.

All corneal wounds, no matter how trivial, should be regarded as serious and treated with the greatest care. It is surprising how casually many people regard wounds of the cornea, allowing any Tom, Dick or Harry to attempt the removal of a foreign body with a dirty match, tooth pick or knife blade, seemingly perfectly oblivious of the danger of infection. I often think some people are more particular about removing a splinter from a finger than a foreign body from the eye. They will immediately run for some iodine to apply to a finger scratch, but disregard the possibility of infection of the eye.

Unless the ulcer is very tiny, it may readily be seen. It will usually have a scooped-out appearance, a dirty greyish floor, and edges surrounded by infiltration. There will be a

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circumcorneal congestion, the amount of this depending in great measure upon the extent and situation of the ulcer. The patient will complain of pain more or less severe, and of a feeling as if a foreign body were in the eye, causing photophobia and lachrymation. Blepharospasm and slight contraction of the pupil will be noted. When healing takes place the depression fills up with new tissue leaving a whitish scar or opacity. This opacity may remain, or as time goes on, become less dense, and in some cases it disappears.

Treatment

I intend to outline the treatment which gives my colleagues and myself the best results. We see a great many cases of foreign bodies and ulcers, both in private practice, and in the Victoria General and Children's Hospitals. I do not profess to give you anything original in the way of treatment, but rather to outline the lines of treatment and the remedies which, with us at least, have proved most successful. Every patient coming to our office with a foreign body or corneal wound, no matter how slight, is treated as if the conditions were serious. We have seen so many seemingly trivial scratches of the cornea develop into serious ulcers that we are impressed with the need for careful treatment. If the case is one of a foreign body, a sterile solution of cocaine (4 per cent) or holocaine (2 per cent) is used two or three times for ten minutes. In passing, it must be remembered that in some cases cocaine causes a drying of the cornea and a peeling-off of the outer membrane. We have seen a few cases where cocaine solution has caused considerable trouble in this way. If the foreign body is small and hard to see we find a Berger's optical loupe most helpful in locating it. The patient should be placed in a good light and the cornea illuminated with a strong lens. Foreign bodies are best detected in this way.

It is always well, of course, first to examine carefully the lower lid. I have several times seen an eyelash which had floated into and become engaged in the punctum, the end sticking out and scratching the eye ball with every movement of the lids. Next the upper lid should be turned, as in many cases, a foreign body is found adhering to the conjunctiva, when every movement of the lid may cause intense pain. A foreign body so situated may be washed away by the tears, but frequently not before it has scratched the cornea. In such cases the wound may be difficult to detect. If unable to see the scratch or foreign body and the patient complains still of feeling something in the eye, insert a tablet of fluoresceine. If a scratch is present and not otherwise visible, the fluoresceine will mark it out with a green stain. If the foreign body is on the cornea it has to be gently removed with a sterilized eye spud. If it is imbedded deeply, great care and gentleness must be exercised and it may take some time to remove it. If cocaine is used it is well to occasionally moisten the cornea with a boracic acid solution.

We have had a few cases in which metal has been driven into the cornea at an angle and quite deeply, making removal very difficult. In one such case which my colleague and myself worked over for some time with no result, we decided to leave it till next day to allow the corneal tissue surrounding it to soften. It was in so deeply and so solidly that we were afraid longer working at it might cause perforation into the anterior chamber. Atropine was instilled and the sac filled with 1-5000 bichloride ointment. Its removal next day was quite easy. Pieces of iron after 24 hours or longer may come off as if in layers. The stain by rust must be carefully scraped off. If the foreign body has been in 24 hours or longer there may be sloughing of the edges of the wound. In such cases, after the foreign body has been removed, it is well to gently curette the edges of the wound and apply lightly a 20 per cent solution of trichloracetic acid. To do this a tiny piece of cotton is wound tightly round a fine applicator, dipped in the acid, allowed to dry a few seconds, and then lightly touched to the wound. By doing this no excess of acid will run over the cornea. The eye is then filled with 1-5000 bichloride ointment and a patch put on and not removed till the patient retires, when, if he follows our instructions, he washes the eye with boric solution and fills the sac again with bichloride ointment. He reports next morning. In the majority of cases of foreign body the eye is healed next day. We insist on the eye being kept closed in such cases, unless there is some contra-indication. I know that some advocate leaving the eye

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open, but personally I think that such a course is unwise and may lead to further trouble. Occasionally after removal of a foreign body the patient may have considerable pain and irritation of the eye. Sometimes it is necessary to prescribe a collyrium for the pain. Do not use cocaine solution for this, but rather a weak solution of holocain hydrochlorid, say ½ gr. of holocain to 2 drams of water. Holocain besides relieving the pain is an antiseptic and has no bad effects on the corneal tissue.

Treatment of Corneal Ulcers

Treatment of ulcers of the cornea is at times of long duration although at other times the healing may be rapid. The pupil should always be dilated with atropine. This usually gives the patient great relief by putting the eye at rest. The pupil should be kept well dilated and the atropine used as frequently as is necessary to keep it so. The conjunctival sac should be washed out with warm boric acid solution three or four times a day or oftener. Heat in the form of hot bathing or the hot water bag should be applied every one to three hours, depending upon the amount of pain and inflammation present. The conjunctival sac should be filled with 5 per cent boric acid ointment or a 5 per cent neo-silvol ointment, and the lid closed with a piece of sterile gauze covered with a patch or strips of adhesive plaster. If the ulcer does not heal readily and seems to be spreading, harsher measures are necessary. It may be necessary to cauterize the ulcer with a chemical cautery or the actual cautery. Of the many chemical cauteries mentioned, iodine, carbolic acid, trichloracetic acid, etc., we have found the latter in 20 per cent solution to be far the best. To use this, the eye is first cocained and the ulcer gently touched with a tiny piece of cotton wool wound on an applicator. The wool must not be too wet, or it will run over the cornea and cause pain. We rarely now use the actual cautery. If the ulcer still is stubborn we are strong advocates of pasteurization of the eye, and we think it is the most valuable treatment for corneal ulcers. We have two methods of applying this form of heat; one electrical (thermophore) and the other with the copper ball heated over an alcohol lamp. The latter we use most. The method of using this treatment is very simple and we have had some wonderful results from it. Cases that looked hopeless have healed quickly. Not only that, but even after the first treatment the patient will remark on the relief afforded and in cases where dilation of the pupil will not take place under use of atropine it will almost always result under pasteurization. I recall one case in particular where even with strong solutions of atropine used with great care frequently in the office, the pupil remained contracted, the patient suffering great pain. Pasteurization was applied, and in a short time wide dilation of the pupil took place with almost immediate relief to the patient. To apply pasteurization in the simplest form, which any of you can do, the instrument I show you is used. The electrical pasteurizer is a little more complicated and would hardly be necessary for any general practitioner to have. This little instrument is a copper ball. The eye is first cocained (this is usually only necessary the first once or twice) and the ball is then held over an alcohol flame till red hot. Standing behind the patient, his head resting on the back of a chair or head rest, the upper and lower lids of the eye are held apart with the fingers of one's left hand. The heated copper ball is then brought to within about an eighth of an inch of the ulcer and held there till the ball begins to cool. This is repeated several times for fifteen or twenty minutes once or twice a day. Of course it is well to explain to your patient what you are going to do; otherwise it is rather terrifying. The results have been, with us, most gratifying. Relief of pain, quicker healing, healing of ulcers that resisted every other treatment, and much less corneal opacity, are the usual results, and the treatment itself is free from any pain or discomfort. In closing I would again emphasize how very helpful pasteurization is in relieving the pain in iritis and also the wonderful aid it is to atropine in dilating the pupil.

I like the story of the Duke of Rutland writing to *The Times* to pray for rain. The rain came down the following day, whereupon Mr. Maurice Baring wrote the epigram: The pious marvelled; sceptics murmured, "Fluke!" The farmers—late with hay—said, "Damn the Duke!"

CANADIAN HOSPITAL EFFICIENCY*

By S. E. Moore, M.D.

Regina, Sask.

SINCE the meeting of the Canadian Medical Association in Victoria last June, the subject of Canadian hospitals has been studied by a committee consisting of members representative of every province in Canada. It is hoped that the plans finally decided upon will bring the various hospitals throughout the Dominion in closer co-operation, with results which will be beneficial to all. In the furtherance of this aim I desire to present the following thoughts which may be regarded as expressing in a measure the views of the Saskatchewan Medical Association regarding this effort. The linking up of all the hospitals, in each province in a provincial organization, each provincial organization to be represented in a Dominion Hospital Association meeting annually at the same time and place as the Canadian Medical Association, but not definitely affiliated with it, will secure in the most practical way not only the most efficient care of the sick, but also the most effective management of every hospital.

With this aim in view, I am of the opinion that no lay organization dealing with the medical or surgical care of the sick should be allowed to exist, if it does not belong to such an organization. By this means all the various organizations may be kept in their proper places and discord prevented.

We must always bear in mind as a fundamental feature in the treatment of the sick in hospitals, that whatever assistance is given to such should be given through the profession, and in no other way. Lay organizations do not understand the medical viewpoint, and frequently through ignorance of this viewpoint dispute the actions of the profession. Lay associations often willingly undertake various obligations for the care of hospital patients, but their actions in the past have frequently given rise to misunderstanding. An organization in which all these lay efforts would be linked up in their proper place in association with a general hospital organization would produce a harmonious whole, rather than a segmentary combination.

It is not necessary for me to quote instances of this. Every hospital can tell you of Ladies' Aid organizations, of groups of willing workers full of ambition in the beginning, anxious to do everything they can do, but when friction arises through some misdirection of efforts, they resent bitterly when brought back to their own sphere. All charitable groups should be fostered, but they should be guided carefully in all their actions for the sick. The doctor must not play a second part. He should not assist finance to take care of the sick, but finance should, acting in a harmonious way, assist the doctor. Without mentioning names, we all know of an institution which had difficulty in regard to its construction, and when the hospital authorities appealed to a wealthy man for assistance, he replied that if they would turn over the whole institution to him, give him the title of the land and all rights of construction, he would build a hospital, equip it and staff it for the care of the sick. In so doing he would select his own doctors to run the institution. At first sight this appeared all right, but shortly after ward-work commenced, trouble arose, and instead of assisting the medical men to act in a harmonious grouping, what grouping did exist was broken up and discord produced. We do not want to see anything of this kind develop in Canada, but we do want all the assistance we can get, so it is up to us to organize a system that will be practically foolproof, and which will link up other charitable institutions to strengthen the position of medical men in their own field. We will look for all possible financial assistance, but we do not want any unnecessary strings tied to such assistance. We do not want finance to tell us that we must do so and so. We want to ask finance to assist

* Abstract, by the Editor, of an address delivered before the annual meeting of the Saskatchewan Medical Association, September 21, 1926. Published by request in the present issue of this *Journal*.

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us in doing what we think proper. To exemplify this last idea let me draw your attention to the grant made by the Sun Life Assurance Company for post-graduate education. The grant was made with practically nothing in the way of strings attached to it; as long as a responsible organization like the Canadian Medical Association could show the Sun Life Assurance Company that a benefit would accrue to the profession, the Sun Life Association was satisfied that benefit would also come to the sick; although this grant was made only for one year we are pleased to note that it was readily renewed. As a result of this action, the profession throughout Canada has not only benefited by the medical knowledge distributed, with definite advantage to their patients, but a better fellowship between the members of the profession has been established which also results in gain to the sick patient.

Offers of money grants have often been made by philanthropists, but they have had so many strings attached to them that hospital institutions have had to decline them. Possibly, when a proper Canadian Hospital organization is fairly started some philanthropist will be pleased to add his financial assistance as his gift to humanity—a gift passing through medical channels and under medical direction.

In the development of every hospital unit a first consideration should be the appointment of a board of governors to act as the supreme authority in all matters in connection with the hospital. Such a board should be appointed from those deemed most willing and suitable in each locality in which a hospital is placed. This board of governors should always have medical men as members of it, and should be assisted by an advisory committee of medical men appointed by the staff. For the internal organization of the hospital there should be a medical staff consisting of all those in attendance, and they should have an organized committee to have the active charge and supervision of the medical work in the institution. This group to be known as the "medical committee" should meet regularly to receive reports regarding the medical work carried on from the "record committee;" a statement of the work carried on in the hospital should be presented at regular intervals; all matters connected with and affecting the medical work of the institution should receive regular supervision. There should also be a staff of lay workers in the hospital to take charge of the internal management under the direction of the medical staff. The reports from these two staffs should be regularly placed before the board of governors, who should finally decide on all matters regarding the institution.

All the various hospitals in a province should be united into a *Provincial Organization,* which should have the final decision on matters which have to do with the treatment of the sick, the management of the hospital, and the provision of the necessary financial requirements. This provincial organization should meet annually at the same time and place as the Provincial Medical Association, but should not be affiliated with it, although it would be wise that each should have representatives on the executive of the other association. I may here state that I was present at a session of a provincial hospital association and was surprised to note that medical men were conspicuous by their absence. Although the delegates showed much zeal in their work, more attention was given to the financial matters than to medical. Medical reports should be welcomed at such meetings.

For the most effective results every provincial hospital organization should send delegates to a *Dominion Hospital Organization,* which should meet at the same date and place as the Canadian Medical Association, forming an organization linking up the profession with all the hospitals from coast to coast. Many obstacles will doubtless arise in the formation of these organizations, but at the first gathering most of these obstacles could be overcome if wisdom and a feeling of amity pervaded the meeting.

What would be the advantages of such an organization? It would prevent overlapping, would strengthen the position of the medical man, would afford assistance to the weaker hospitals, and would prevent untrained artisans from taking on medical work. The medical profession must be maintained in its proper position. At the present we are training nurses, giving hours and hours of our time to produce nurses of high standard, with what result? Nurses to-day are doing dressings, looking after school children, practically making diagnoses, and in the offices of busy doctors give various forms of first aid. They not only "follow up"

the after care of the patient, but actually encroach upon proper medical work.

Furthermore, in a recent medical magazine I noticed the question asked: just what is the field of the dentist? What branch of oral surgery is he permitted to do? The physician views with some alarm the extent of their field, especially in orthodontia, if they decide to occupy it. A dentist recently took a patient to a hospital and attempted to do certain surgical work, which he claimed was rightly within his field, and it was not until it was pointed out that none but members of the staff could care for patients in that institution, that he was checked in his work.

Quite recently the osteopaths of Saskatchewan asked for hospital rights, and it looked at one time as though they were going to get them, and but for the concerted action of the medical men, such rights would have been given.

The layman's opinion of all this would seem to be that care of the sick in one way or another was the important feature, and any group who would do work should be given the commission to do so without any consideration of the possibility of actual harm accruing from the treatment employed. With the linking up of all charitable efforts in connection with hospitals under an efficient organization a better relationship between the laity, the sick and the profession should be established. Various charitable organizations such as the Red Cross, baby clinics, tonsil clinics, clinics for social diseases, and all similar organizations should be affiliated in their work with the hospital, and each given a determined position in which to do its own respective work. There is no necessity of downtown clinics paying room rent and other expenses when such clinics might be run in connection with the hospital. Many other features will probably come up for consideration which will tend to effect a definite improvement in the medical and surgical equipment for the care of the sick. Research work of limited conditions might be initiated in regard to infections which develop in hospital work. On the financial side much information would be available from a central organization regarding expenses and supply rates. Guidance might be obtained for additions to be made to institutions, and improved plans for the erection of new buildings could readily be distributed; and advice in reference to new equipment could readily be secured. Uniformity would also be secured in the training of nurses and the amount of service which should be demanded of them.

The relationship of a hospital to the province in which it carries on its work is generally recognized. Hospitals are constantly receiving municipal patients who become indigent, and become either a loss to the hospital, or an expense to the municipality. In some provinces municipal hospitals have been built with backing from the provincial government after certain rules and regulations have been complied with. A well equipped hospital in a municipality is an asset, but many municipalities have considered their hospitals as anything but that, particularly if the expenditure is more than they feel like paying. By means of a central organization help and advice could be given to both municipality and hospital to the advantage of the patients who require treatment, and to the benefit of the community.

A central organization of this sort would require a central office where records of the various institutions could be kept, and where they would be available to every institution in the province. It would necessitate a general secretary for the work of hospital organization; if possible, one with a knowledge of the hospitals of Canada and of hospital work, who might be called upon to assist in the establishment on an efficient basis of such an organization, and one who would act as a link between the various hospitals and the central organizations and thus promote harmonious action, and at the same time leading to the efficient care of the sick.

Can such a scheme be financed and carried on? There are in Canada, not counting sanatoriums, 676 hospitals, with a bed capacity ranging as high as 900 and running down to 25. If we were to consider a lump tax of $20.00 per hospital it would give us $13,520.00 to carry on the work. If necessary a sliding scale could be arranged, running from $10.00 for those in the neighbourhood of 25 beds, up to $45.00 for those in the neighbourhood of 900 beds.

I think this plan produces a method that is self-evident, and capable of being put into action. However, if there is a proposition to ask assistance from some philanthropic body, I think, we as a Medical Association need not be hesitant in approaching any one, for what body of men is more philanthropic than the medical? What man

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of finance, who has made his fortune from some invention or some financial manipulation can stand beside Pasteur, Lister, Osler, or even our present day Banting. These men have given freely of their knowledge, but never thought of financial gain.

Our profession has constantly limited its own field and is singular in that position. Whereas each new law increases the scope of the lawyer, each prophylactic gain decreases the financial returns of the medical men. Where are our typhoid epidemics and our diphtheria epidemics of the past? Was not this an accomplishment of the medical man? So when we appear before the public asking assistance in our plans we are only asking back a slight percentage of what we have saved for the public.

Let us carefully guard our heritage and prevent our profession being exploited to the n'th degree, and let us take this step forward to show that the Canadian profession is awake to its hospital requirements; and that the Canadian profession will endeavour in the future to make the hospitals of Canada second to none in the world.

In conclusion I ask that you endorse a scheme for Canadian Hospital Efficiency, putting your shoulder to the wheel, and assisting those of the committee in your community to bring into being a scheme for the betterment of the profession, and the perfecting of the care of the sick.

National Association for Prevention of Tuberculosis.—The National Association for the Prevention of Tuberculosis has issued an illustrated historical sketch of its career from its inception in 1898 down to last year. Notwithstanding the assumption by the State and local authorities of responsibility for tuberculosis schemes, the association is convinced that much remains in which voluntary bodies may render assistance. The directions in which the association desires to extend its efforts are in educating every member of the community in the cause and prevention of tuberculosis, and in developing a scheme of tuberculosis care committees throughout the country. A further object of the association is "to render aid to pressing claims for help, communal and individual, . . . when the need cannot adequately be met, if at all, by provisions rendered possible by statute." The pamphlet sets forth a very fine record of work accomplished by the association in diffusing knowledge of the disease amongst the lay population, and in promoting various schemes, national and international, for dealing with the victims of tuberculosis. To aid in treatment the association has taken up the subject of training for voluntary workers in tuberculosis, and, at the request of the Joint Council of the Order of St. John and the British Red Cross Society, drafted a scheme of training for members of Voluntary Aid Detachments. A tuberculosis survey of England was undertaken on behalf of the British Red Cross Society. During the war the association urged on the War Office and other authorities the need for providing for the future care of tuberculous ex-service men. The proposals included the establishment of farm colonies, and of homes for advanced or dying cases. The association was able to establish the Burrow Hill training colony in Surrey, and to assist in the foundation of the Southfield sanatorium colony near Edinburgh. The setting up of tuberculosis care committees throughout the country is regarded as a matter of immense importance, and as essentially work for voluntary associations.. The care committees should help the tuberculosis officers to solve many problems for the sufferers from the disease, to re-create disorganized homes, to clear away conditions in which tuberculosis is bred, and to train and guide the young in the selection of suitable and healthy employment.—*Brit. M. J.*, March 19, 1927.

The Foam of Mad Dogs.—Many vain attempts have been made to discover why the foam in the mouth of mad dogs is such a powerful agent for the transmission of rabic virus. It has been established that the micro-organism of rabies exists only in the nerve tissues and is propagated only by them. Dr. Roux, director of the Pasteur Institute, has announced to the Academy of Sciences that Messieurs Manouelien and Viala have discovered the explanation sought. The tongue of the dog contains large numbers of nerve cells, probably tactile, immediately below the epithelium; in these, in cases of rabies, one finds a large accumulation of Negri bodies. In labioglossopharyngeal paralysis, which is associated with rabies in the dog, the dog clicks his tongue frequently against his teeth or the objects that he bites and bruises the delicate epithelium, which allows the Negri bodies to be distributed throughout the saliva.

New Instruments and Technique

A NEW INSTRUMENT FOR TUCKING OPERATIONS

For the Correction of Strabismus

By W. T. Gratton, M.D.

Queen's University, Kingston

THERE have been many good tucking operations described by different men in the past but in my mind there have been none so simple and effective as the Clemens tuck which was presented by Dr. Clemens three months ago at the Section of Ophthalmology of the College of Physicians and Surgeons at Philadelphia.

Since then we have had the opportunity of doing this operation on numerous cases with great success.

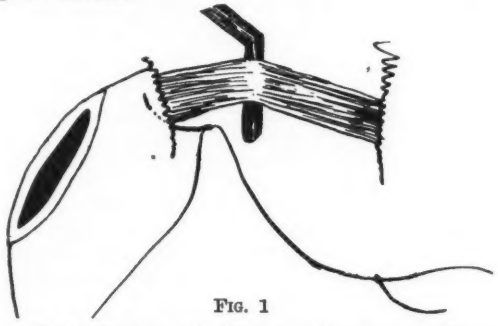

Fig. 1

The technique of the operation is as follows: a vertical incision is made in the conjunctiva about 8 mm. from the limbus, Tenon's capsule opened and the tendon of the muscle secured with a strabismus hook and cleared of adherent tissue to the extent of 10 to 12 mm. The upper part of the tendon is scarified the

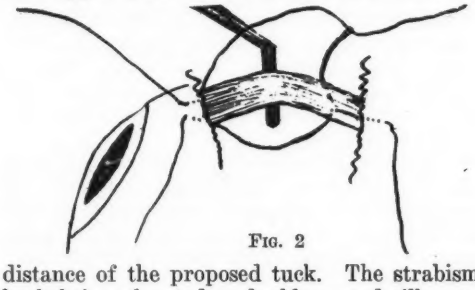

Fig. 2

distance of the proposed tuck. The strabismus hook being elevated, a double armed silk suture No. 1 is passed from below upwards, catching a few fibres of the sclera at the same time near the insertion of the tendon and coming out at the same region, picking up the conjunctiva which had previously been reflected. The other arm of the suture is then passed through the tendon 10 to 12 mm. to the medial or lateral side as the case may be in a similar manner to the first suture, namely, from below upwards according to the nature of the squint and the amount of correction desired. Another such suture is placed at the lower margin of the tendon. (See Figs. 1 and 2.)

Fig. 3

The Clemens tucker, the upper arm of which is depressed by the attached screw (Fig. 3) is then applied, keeping the loops of the two sutures above the arm which does the depressing (Fig. 4).

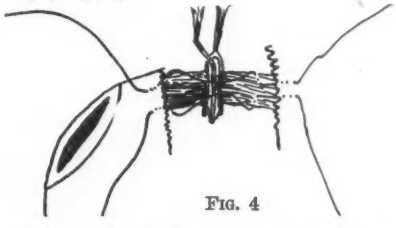

Fig. 4

The globe is then rotated in the proper direction and held by an assistant until the sutures are tied, the tucker loosened until both arms are on an even plane, and it is then removed and the sutures more securely tied; giving us a tuck as in Fig. 5.

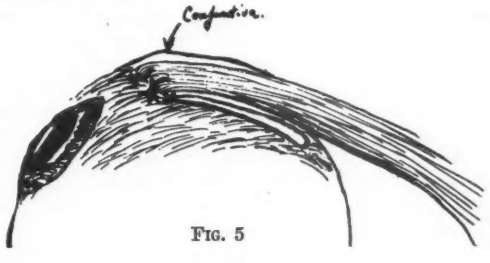

Fig. 5

Advantages:

1. Simplicity.
2. No destruction of tissue.
3. Use of only two silk sutures tied outside, making their removal easy.
4. Ability to control the amount of tuck.
5. Depression of the tucked loop along the sclera, leaving no unsightly lump and the healing of the opposed surfaces, both tendon and sclera.
6. Very little reaction and practically no scar.

Reviews and Retrospects

PERNICIOUS ANÆMIA

By W. F. Hamilton, M.D.

Montreal

The interest in pernicious anæmia is perennial and views based upon careful observations never fail to receive the close attention of the medical practitioner. Several such articles have appeared recently, and a review of their statements may prove of value. The *etiology* remains unknown, although Dr. Dorst[1] asserts that the old conception that pernicious anæmia is chiefly a blood disease has changed, and compares the blood relationships of the changes in the disease with those of lead poisoning. Achlorhydria, constitutional, congenital and acquired by eliminating the normal bactericidal functions of the gastric secretions predisposes to anaemia. The writer contributes to the subject of the etiology reports on 11 cases of familial pernicious anæmia from his own practice.

The *treatment* of pernicious anæmia so long as the etiology of the condition is not known must remain more or less empirical. In this matter, however, practitioners should not despair for was not malaria treated with a large measure of success before its cause was determined? Diet, arsenic, and blood transfusion are advocated with varied enthusiasm according to the results observed by their persistent application The pessimistic or the nihilistic therapeutist reading favourable reports explains the results on the basis of a disease whose normal course shows marked remissions.

Diet has its advocates generally from among those who have adopted quite recently one rich in proteins, as liver, lean meat, vegetables and fruit, with but little fat. Liver is of first importance and may be chosen from calves, oxen or chickens; fats, sugar and starchy food should be used sparingly; milk should be restricted to one half pint daily. At first, this diet is found distasteful to many but when persistently taken has been followed by remarkable results. It should be arranged to contain about 2,500 calories, and even after the blood examination shows a favourable result the patient should continue the diet. Generally all drugs are withheld.

Gulland[2] in discussing Sir Humphry Rolleston's[3] paper on Blood Transfusion in the Treatment of Disease, remarks concerning pernicious anæmia: "My own experience has convinced me that *arsenic* given by the mouth is so immensely superior to all the other methods of treatment put together, that every case should have a proper trial of that remedy; and, further, that cases that will not do with arsenic by the mouth will seldom respond to arsenic given in any other way or to any other form of treatment."

The real value of *blood transfusion* in pernicious anæmia is to help the patient round the critical corner, to raise his low vitality, exhausted by toxæmia, and give him a chance to recover himself. The condition rarely comes in the first attack but in the second, third or even fourth attacks this treatment is considered and used. A patient with 1,000,000 red blood cells per mm. and 25 per cent hæmoglobin was not, in Gulland's opinion, in immediate danger from anæmia.

In summarizing his views on this point, Dr. Gulland stated that transfusion is most useful in uncomplicated cases that are lagging. If a patient does not respond to one transfusion a second will rarely help him.

Grinker's[4] views may be presented by simply making use of his conclusions. The article contains many references to the literature an abstract of which would be difficult.

1. Normal gastric acidity may be present in pernicious anæmia.

2. The rarity of achylia preceding the anæmia by many years makes it improbable that achylia is a predisposing cause. The fact that the anæmia may go unrecognized for some time may account for these cases.

3. There is no evidence that there is an intestinal infection in pernicious anæmia or that streptococci lying latent in the bowels of these patients are the producers of absorbable toxin.

4. Thirty per cent of pernicious anæmia patients develop definite signs of combined cord degeneration.

5. Combined cord degeneration may be caused by the hypothetic toxins producing the pernicious anæmia, or developing during the course of the disease, but may also be the result of numerous other toxic conditions such as Addison's disease, carcinoma of the bowel, pellagra and arteriosclerosis.

6. Eighty per cent of patients having pernicious paresthesia as the initial complaint developed cord degeneration, while only 20 per cent developed cord degeneration when paresthesia appeared during the course of the disease.

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Editorial

HYGIENE AS A WORLD FORCE*

IN his address at the opening of the new School of Hygiene of Johns Hopkins University, Dr. Balfour could not refrain from contrasting the influence on human life of applied hygiene with that of the numerous religious beliefs, Judaism, Mohammedanism, Buddhism, Confucianism and the many other creeds which have in past ages held sway over the actions of peoples. Hygienic instinct preceded the religious instinct and even now makes a wider appeal. The most primitive tribes practise certain health laws essential for life and procreation, for love of life and the desire for reproduction dominate every race of men.

It would seem also that while certain forms of religious belief have a hygenic basis—both Moses and Mohammed taught the laws of health—sanitation has been more potent than creed in elevating the masses. Furthermore, too often have narrow religious beliefs produced turmoil and bloodshed, while hygiene as a world force has proved a power for peace. Organized religious belief has been a bitter foe of progress and enlightenment. To the betterment of daily life and the condition of the working classes religious bodies in the past have given little serious attention. On the other hand, scientific knowledge applied to the prevention of disease has brought freedom from many diseases, and associated with this freedom a general betterment of conditions for the living.

Dr. Balfour extended his comparison to three other world forces: the pursuit of pleasure, the pursuit of wealth, and the pursuit of knowledge. Pleasure and wealth have but an evanescent influence compared with that of hygiene. The art and the science of hygiene have arisen from the pursuit of knowledge, and hygiene is the application of knowledge to man's needs and desire for the preservation of health.

Hygiene as a world force acts in various ways:

1. By the great system of quarantine, the first act for which was passed in 1700 in Pennsylvania, entitled "An Act to prevent sickly vessels coming into this Government."
2. By the abolition of scurvy and ship beri-beri.
3. By child welfare: laws regulating milk supply: researches in tropical medicine, syphilis, tuberculosis, etc., etc.
4. War with its deterring and destructive aspect has advanced the science of hygiene, and contributed greatly in making it a world force.
5. Wealth may also contribute to this end and the millions given by such men as John D. Rockefeller are making hygiene a world power with amazing possibilities before it.

Yellow fever, well nigh exterminated in America, and malaria, rapidly diminishing in West Africa, hookworm campaigns and the war on the ankylostome, all attest the power of scientific knowledge over disease.

The health organization of the League of Nations is likely to prove the most constructive and most successful part of the great Geneva organization, and appears to be designed to further the coming of the millenium.

W. F. HAMILTON

* Andrew-Balfour, *Brit. M. J.*, Oct. 20, 1926.

ON THE AFTER CARE OF THE DISCHARGED TUBERCULOUS PATIENT

A COMMITTEE of the joint Tuberculosis Council of England undertook some eighteen months ago to make a survey of the problem of how best to employ the consumptive after he has been discharged from the sanatorium. In an editorial in a recent number of the *British Medical Journal* the opinion is expressed that, except in rare

instances, a worker who has broken down from tuberculosis can never safely compete again in the industrial world. Even with quiescent disease the work of such a one is apt to remain 30 or even 50 per cent less efficient than that of a healthy workman similarly trained, and the committee of the Tuberculosis Council was unanimous in its belief that those able ultimately to be employed on a remunerative financial basis form only a small fraction of those fit for some employment. In its opinion the best method of attacking the problem was to develop vocational therapy at existing sanatoria, and to make some forms of industrial training an integral part of treatment, until by the efficiency of the patient at his work it became possible for him to earn a living wage. In this way a nucleus of settlement may be formed. At the early stage of such a scheme capital expenditure is inevitable, unless it is to be crippled by the inability of the sanatorium to extend its departments of work, which may have been set running on sound lines. No fewer than 51 different occupations have been suggested as suitable for patients discharged from sanatoria. The committee recalls a remark made by a director of the New York Tuberculosis Association on the difficulty of finding a suitable job for a tuberculous person and keeping that person in his job.

Farm work is certainly too arduous, but the raising of poultry , fruit farming, and bee keeping (for those who know how) may be admissible. Any workshop occupation should be one not requiring a long period of training. It is better, in the opinion of the committee, in beginning any scheme to specialize in a few employments than to have mediocre results in many. Directors for such schemes, who can combine medical oversight with a practical knowledge of industry, are seldom to be obtained. When, however, all the requisites are obtainable, there is no limit to the possible success of a well devised scheme which may grow from small beginnings to a great social movement. The committee strongly recommends that schemes admittedly successful should be encouraged to develop further by being freed from the obligation of raising capital through their own efforts. Schemes which are successful should be copied in other places.

A circular letter was recently sent to the superintendents of all our Canadian sanatoria asking for opinions and suggestions on this problem, and we publish in our correspondence department in this issue the replies received.

It is admitted by all that the problem is an important one and demands careful consideration by the profession. In 1920 the best measures to be taken for the care and employment of the tuberculous ex-service man after discharge from his sanatorium were considered by a Board of Consultants. In their report it is stated that the undeniable value of sanatorium treatment by itself has long been overestimated in the minds of both the medical profession and the laity. The relapsing nature of tuberculosis has not been realized, and exaggerated hopes have been indulged in of what sanatorium treatment is able to accomplish in patients suffering from this disease except in the case of those in which the disease is recognized in its very earliest stage. Any scheme which does not include the whole life of the consumptive must end in failure.

Statistics of patients discharged from the Trudeau Sanatorium at Saranac Lake show that after twenty years over 80 per cent had died, and in 92 per cent of these the cause of death was stated to be tuberculosis. Investigation of the working capacity of 273 patients discharged during the years 1905 to 1910 inclusive, disclosed the fact that of 62 cases discharged as cured by various sanatoria in the State of New York only 44 were working; of 75 discharged as having the disease arrested only 53 were working; of 89 permitted to leave the sanatoria as improved 50 were working, and of 47 sent out as unimproved, 18 were working. In other words of the cured and arrested cases, only 71 per cent were at work; of the improved only 56 per cent; while of the unimproved 38 per cent were working. Of their efficiency, and of the number of hours in the day these tuberculous patients worked, nothing is said. These results cannot be regarded as very encouraging, and the opinion is gathering strength that the results obtained in sanatoria, valuable as they are, should be supplemented by after-care. Regarding the need of such after supervision, there appears among those interested in these cases, no

dissenting voice. The problem, however, is considered by all in every country as a difficult one, and one which can only be worked out slowly. For the present in Canada we would strongly recommend the scheme proposed by Dr. Elliott, that in every province there should be a committee of individuals interested in this problem, who, acting through a capable bureau, should endeavour to secure for the discharged tuberculous patient, not only suitable employment, but also homes in which efficient ventilation, fresh air and sunlight may be obtained.

CONGENITAL TUBERCULOSIS AND BACTERIAL DISSOCIATION

WITHIN the last three years there has been carried out in Paris a series of most convincing researches upon congenital tuberculosis, which opens up new ideas in both clinical and bacteriological fields.

The new line of investigation was formulated upon the almost forgotten researches of Fontès in 1910, who claimed that from sputum and the pus of cold abscesses he had been able to demonstrate a filtrable form of *B. tuberculosis*. Vaudremer, Durant, Valtis and others, at first working more or less independently, confirmed the earlier work of Fontès quite fully.

In last year's (1926) proceedings of the Academy of Medicine of Paris several notable papers were read dealing with extensions of this new line of research, particularly in its application to the transplacental passage of filtrable forms of *B. tuberculosis* to the fœtus *in utero*. Durant, Arloing and Dufourt, E. Sergent and others contributed reports on this subject and were able to bring forward undeniable proof of it[1]. Later in that year, a paper appeared in *La Presse Médicale* by Calmette, Valtis and Lacomme, furnishing further positive evidence.

From these researches it would appear that not only in sputum, pus of cold abscesses, tracheo-bronchial glands, pleural effusion, and such like, can filtrable invisible forms of Koch's bacillus be found, but what is more to the point, in reference to the early tuberculosis of infancy, such filtrable forms pass through the placenta of a tuberculous mother to the fœtus. Then upon birth, many of these infants succumb, frequently within one to three months, without any evident cause of death being discernible, as cases of, what the French call, "unexplainable death."

Now, these investigations show that in such cases at autopsy, apart from the usual evidences of malnutrition, there can often be found hypertrophied mesenteric or tracheo-bronchial glands, which do not exhibit any macroscopic appearances of tuberculous infection, yet may or may not disclose a few tubercle bacilli. When such glands, and even organs like the spleen and liver, are ground up and filtered through a Chamberland filter, either L 2 or L 3, and this filtrate injected into guinea pigs, these animals frequently show a definite tuberculosis, or die in an emaciated condition with evidence of tubercle bacilli in non-caseous, but swollen lymph nodes of the abdomen or thorax.

Such evidence of an invisible filtrable form of *B. tuberculosis* has also been proved to exist in cultures three to eight weeks old by Vaudremer and others.

These facts carry us back to the days when there was a considerable amount of discussion over Much's paper (1908), on the appearance and significance of certain Gram-positive staining granules, (Much's granules), to be found in sputum, lymph nodes and in the pus of cold abscesses. The general consensus of opinion was that they were possibly degenerative detritus of the tubercle bacillus. In the light of these recent investigations it would now seem probable that, far from being degenerative detritus, they represent what is now termed "dissociation forms" of the tubercle bacillus, and grade down in sizes to microscopic invisibility. Further, these researches run parallel with recent observations made on other bacterial species in reference to particular morphologic and cultural changes, the so-called cyclogenic phenomena.

Thus there are opened up new, large and intensely interesting fields for clinical, bacteriological and epidemiological studies.

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Studies of this nature are well on the way to overthrow, it may be, the old and conservative views upon the stability of morphological and cultural appearances, and to cause us to assume a broader and freer outlook in reference to the factors constituting bacterial species.

A very scholarly and important contribution dealing with this whole subject of "bacterial dissociation" is given by Philip Hadley[2], which makes one feel that our whole conception of the life-histories of bacterial species will have to undergo, in the immediate future, profound modification. It would even appear that the activity of d'Herelle's bacteriophage is only one expression involved in the steps of bacterial dissociation, as witness the investigative results of Hauduroy[3], who through the action of a bacteriophage on cultures of *B. dysenteriæ, B. typhosus, B. paratyphosus* and *S. aureus*, was able to secure filtrates, apparently sterile, but from which after many transfers of finely granular matter ultimately forming in them, he recovered culturable bacteria corresponding to the respective original cultures.

Using pieces of organs from a typhoid cadaver, Friedberger and Meissner[4], inoculated guinea pigs and found that they developed a high fever in some ten days or two weeks after inoculation. Killing these animals and utilizing their brain tissue for further passage, the same symptoms were again produced. Examination of the brains of such seemingly infected animals gave negative cultural and microscopic results. Inoculation of the brains of such guinea pigs into rabbits produced in these recognizable amounts of agglutinins for *B. typhosus*. The authors were therefore led to believe that the infectious process in the guinea-pig was effected by a non-culturable and ultramicroscopic form of the typhoid bacillus, which they call typhoid "virus."

Again, it would seem that *Rickettsia prowazeki* is nothing but a dissociated form of proteus X-19, the diagnosed bacterium in cases of typhus exanthematicus, if we can believe the report of Fejgin[5], who worked on bacteriophaged cultures of proteus X-19, filtering them through a siliceous filter, injecting guinea pigs and lice with the filtrate, and recovering from these animals bacteria which agglutinated with typhus serum.

Furthermore, Hauduroy reports[6] that he was able to isolate from a culture of a filtrate prepared from the fæces of a typhoid convalescent, an organism in all cultural aspects, resembling the *B. typhosus*, but not agglutinable to typhoid antiserum. In another instance, after filtering water from a polluted well, and cultivating the filtrate in peptone solution for several months, he finally got a rod-formed bacterium corresponding culturally to *B. typhosus* and agglutinating slightly with typhoid antiserum.

Perhaps, some of this work reported may not successfully withstand adverse criticism, but, considered in the light of Hadley's able presentation of the subject, one cannot but feel that we are on the verge of another great advance in bacteriology, and in the battle against infectious diseases will move along new lines of attack.

N. MacL. Harris

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4. *Klin. Wochen.*, March 5, 1923, 449.
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ON THE VALUE OF SANOCRYSIN IN TUBERCULOSIS

AN interesting paper by Dr. Th. Madsen, the Director of the State Serum Institute, Denmark, and Dr. J. R. Morch, detailing the results obtained with sanocrysin in the treatment of experimental tuberculosis in animals, appeared recently in the "*Acta Tuberculosea Scandinavica*", II, 1926, No. 2, 99.* In this experimental investigation two different cultures of bovine bacilli were used: (1) an old laboratory culture of low virulence, and (2) a recently isolated virulent culture. The results obtained by the authors in a long series of experiments in their opinion indicate that infection in rabbits induced by the intravenous inoculation with cultures of these different strengths when treated with varying doses

* The translation of this article has been sent us by Dr. Arnold Branch, Trudeau, N.Y.

of a solution in saline of sanocrysin undergo a certain amount of cure.

In the first series, using bacilli of low virulence and commencing treatment only after tuberculous lesions were found microscopically in the lungs of the control animals, that is in about six months, the treated animals when killed showed healed, calcified and sclerosed lesions.

In the second series when virulent tubercle bacilli were made use of and the treatment with sanocrysin was begun, four to twelve days after the inoculation, although the controls began to die 17 days after the injection, those treated by the use of sufficiently large doses of sanocrysin showed signs of a checking of the infection, and when the animals were killed three months later they presented no macroscopic evidence of tuberculosis. Nevertheless inoculation of the lungs of such animals into guinea pigs and cultures on Petroff's media indicated that infection was still present.

In the animals inoculated with the less virulent strain the signs of infection are limited in the majority of cases to the lungs. In the animals inoculated with a virulent organism the organisms appear to grow immediately wherever they penetrate, despite the natural defensive forces of the body, and when the animals are killed one finds tubercle bacilli scattered through all the organs.

The animals inoculated with bacilli of low virulence reacted violently as a rule to the treatment by sanocrysin. On the other hand it is stated that of the 150 animals inoculated with virulent bacilli and treated with varying doses of sanocrysin the amount of reaction was variable; in the majority slight and rarely as severe as followed the inoculation with less virulent bacilli. Thus the appearance of the reaction appears to depend on the nature of the infection. Mollgaard explains these reactions as caused by toxins liberated either from tubercle bacilli killed or from the tuberculous tissues. It would certainly appear from these experiments that even a very small lesion produced by an organism of low virulence may give rise to a strong reaction, while an extensive tuberculous infection in all the organs of the body by a virulent strain may give rise to only slight reaction. In the latter the injections are borne by the animal without inconvenience even when the sanocrysin is administered in large doses (2 to 2½ cgr. per kg.) This was observed more definitely in a series of experiments in which the animals received, with only slight signs of reaction, 1.5 cgr. per kg. Unfortunately, half of these animals at autopsy showed macroscopically more or less extensive tuberculosis. Of the remainder although presenting no macroscopic evidence of tuberculosis the tissues when tested by inoculation into guinea pigs and by culturing on Petroff's media contained living bacilli capable of infecting. Animals treated with 1 cgr. per kg. lived longer than the controls, and even in some cases with 0.5 cgr. per kg. some prolongation of life was brought about in some of the animals. The problem, however, of how sanocrysin acts in the organism was not solved by these experiments. It appears that after infection occurs a certain time must elapse to permit the curative effect of sanocrysin to manifest itself. This does not accord with the assumption that sanocrysin has a direct bactericidal effect in the organism.

The writers draw the following conclusions from their experiments: They regard it as proved that treatment with sanocrysin can cause healing of experimental tuberculosis. in rabbits; and although they consider that the most serviceable dosage to be employed in tuberculosis in man is far from being solved by their researches, in their opinion treatment by sanocrysin in small doses at first gradually followed by larger ones may lead to a good therapeutic result.

Dr. E. R. Baldwin of Saranac Lake in a paper recently read in Rochester, New York*, discussed critically the use of sanocrysin and the following is an abstract of his remarks.

"Inasmuch as reputable experimental evidence has been adduced both for and against the use of sanocrysin the basis of this remedy seems worthy of discussion. In the first place sanocrysin has been said to inhibit the growth of tubercle bacilli in culture in the same amount that characterizes the action of potassium gold cyanide, namely 1 in 1,000,000. When this statement was put to the test it was found that much stronger concentrations were necessary; even 1 in 1,000 solution was tolerated in liquid cultures, and a 1 per cent solution failed to kill all the bacilli after 24 hours immersion. No evidence has been obtained that the gold salt enters into combination with the bacillus. When the salt is administered intravenously well marked focal

* In course of publication in *Boston Medical and Surgical Journal.*

reactions are produced in the tuberculous tissue followed by fever, due, Mollgaard considered, to the death and dissolution of tubercle bacilli in the lesions thus setting free endotoxins. The implication is that a direct action on the bacilli occurs, which in the light of the above mentioned facts would appear to be unlikely. Clinicians in general are agreed that careful selection of the cases is necessary as harm may undoubtedly be done to chronic types of pulmonary disease, especially when complicated by intestinal disease. Lastly it was stated that the metallic poisoning characteristic of gold and mercury and affecting kidneys, skin and mucous membranes, could be avoided by proper dosage. This is found not to be always true. A critical summary therefore of the literature on sanocrysin does not give any ground for the high hopes held out by Mollgaard.

"From the standpoint of a specific there is but one element that arrests attention, and that is the focal reaction in the tuberculous tissues. For this there is no longer reason to think a specific agent necessary. Many substances administered intravenously excite vascular congestion in recent tuberculous tissues. Evidence of the toxic action of gold on the capillary endothelium has been known. This is sufficient to account for the exudation and inflammation produced. There is also reason to regard the action of gold as a catalyser, increasing the rate of oxidation or ferment action in the tissue. If tubercle bacilli are destroyed in the process, it is not necessary to assume that gold *per se* is the agent. The elimination of gold is slow, only half of the amount injected is excreted promptly, the remainder is excreted gradually so that a cumulative action is only to be avoided by a constant test of the urine.

"Although it is probable that the preponderance of adverse opinion on the action of sanocrysin, will soon restrict the use of this drug, outside of Denmark, valuable lessons may be drawn from this latest respectable contribution to the treatment of tuberculosis. (1) It would not appear to be desirable to attempt to kill tubercle bacilli in the body in face of the fact that they are already embedded in the tissues and only occasionally get free in the lymph or blood circulation, and to attempt to break down tuberculous tissue already of considerable extent is fraught with danger and is irrational. (2) In our opinion it is not likely that any agent acting upon tubercle as tuberculin does, will prove to be superior to it? Experience shows that for internal tuberculosis any agent causing inflammatory reactions has no obvious advantage. It is possible that some germicide combined with tuberculin may work to our advantage, yet experiments along this line have not accomplished much thus far.

"The absorption of recent inflammatory or so-called collateral inflammation surrounding a tuberculous focus is often complete without any treatment other than rest and good hygiene. If the added stimulus of focal reactions should be requisite the means used must be safe, or applied with a discretion born of experience. The first thought concerning any specific for tuberculosis should be 'Can it improve on nature?' For the present, the theory that a specific has been found to act directly on the bacilli has lost favour. The best explanation of the action of tuberculin and similar irritants is that they hasten and intensify oxidation and enzyme activity, which in turn affects the bacillus. There are recently published experiments pointing to a marked stimulation resulting from the injection of minute quantities of mineral salts. Exact concentration of the salts are required in order to achieve the best results. There is a special concentration for each salt which appears to follow the law of Arndt: weak irritants arouse vital action, medium strengths promote it, strong doses decrease it, and the strongest doses abolish it. The subject of chemotherapy is undoubtedly fascinating and the field is open for new ideas. Let us meanwhile be pleased to assist the natural weapons provided for our defence."

THE PROVISION OF BEDS FOR TUBERCULOUS PATIENTS

IT is a generally recognized fact that the mortality from tuberculosis is steadily and rapidly declining.* The rate of decline, however, is by no means uniform in all countries; New Zealand, for example, shows a rate of 51 deaths per 100,000 from tuberculosis and Italy a rate of 162 per 100,000. Canada shows a rate of 79.8 per 100,000 and Germany 133 per 100,000. Why should there be such wide variations?

To answer this question would naturally require a far reaching analysis, for there are many factors to be taken into consideration, but one circumstance whose effect is attracting particular attention is the extent of hospital accommodation which each country provides for its tuberculous cases. One writer† goes so far as to say that tuberculosis hospitalization would seem to be one of the outstanding factors in the control of tuberculosis, and the statistics on which this claim is based appear convincing, since they show without exception that the countries with the greatest number of beds available for tuberculosis are those which have the lowest annual death rate from this disease.

For example, the three countries in which this rate is lowest are New Zealand, Canada and the United States, the figures being 51, 79.8, and 89 per 100,000, respectively (in 1924); and the ratio of beds devoted to tuberculosis is nine for each ten deaths in New Zealand, and seven for each ten deaths in Canada and the United States. In contrast with these figures, Germany shows a tuberculosis death rate (in 1925) of 133 per 100,000, with four beds for each ten deaths, France a rate of 170, with three to four beds per ten deaths, and Czechoslovakia a rate of 250 with one bed for every ten deaths.

* Certain figures, however, tend to show that the rate in America at any rate was stationary during 1926, *vide Stat. Bull. Metropolitan Life Ins. Co.*, Jan., 1927.

† Godias J. Drolet, in the *American Review of Tuberculosis*, Dec., 1926, xiv, No. 6.

It is true that these mortality figures should be considered in the light of other factors as well, but if an analysis along these lines alone be made of the situation in Canada, Province by Province, the significance of the amount of hospital accommodation again becomes strikingly apparent. This is illustrated by the accompanying table, which Dr. R. E. Wodehouse, Secretary of the Canadian Tuberculosis Association, has very kindly sent us.

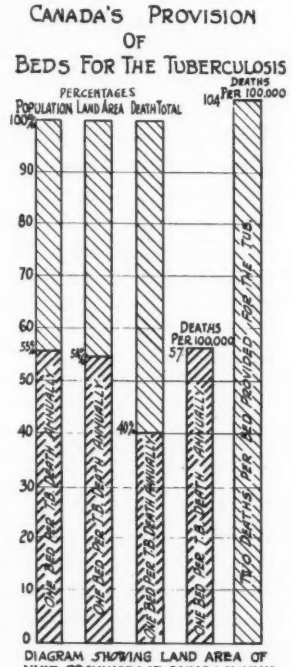

DIAGRAM SHOWING LAND AREA OF NINE PROVINCES OF CANADA HAVING ONE INSTITUTIONAL BED PER DEATH ANNUALLY TOGETHER WITH THE POPULATION SERVED, ITS TOTAL TUBERCULOSIS DEATHS 1925, AND ITS TUBERCULOSIS DEATH RATE PER 100,000 POP. THE CALCULATIONS ARE BASED ON B. C. POP. AND T. B. DEATHS LESS ASIATICS AND INDIANS.

The first column shows that 55 per cent of the Canadian population (occupying 54 per cent of the land area, column 2) have a provision of one sanatorium bed for each death from tuberculosis, and coincident with this (if not consequent upon it!) there is shown to exist (column 4) amongst this proportion of the population the remarkably low rate of 57 per 100,000, or as is shown in column 3, only 40 per cent of the total number of deaths from tuberculosis in Canada.

Column 5, on the other hand, shows that there is in the rest of Canada a provision of only half a bed for each death from tuberculosis, with a coincident death rate from tuberculosis of 104 per 100,000. In other words, this proportion of the Dominion shows a mortality rate which is nearly double, and a provision of beds which is only half of that found in the rest of Canada.

To go a little further yet, we are informed by Dr. Wodehouse that last year the Canadian Tuberculosis Association made a study in Canada of the decrease in deaths from tuberculosis as compared with the decrease in mortality from all other causes, over a period of 15 years, by five-year periods. The populations studied were Montreal, the Province of Quebec, the Province of Nova Scotia, and the Province of Ontario. It was found from this survey that all four groups showed decreases in both respects. It was also shown that the Province of Quebec presents the lowest percentage of beds for its tuberculous cases, a percentage so low that Dr. Wodehouse insists that all its other provincial activities in fighting tuberculosis are thereby not only hampered but may be even made of no avail.

This is an inference which cannot be ignored. By implication it contains criticism, and suggests an objective to be aimed at in the attainment of the ideal for which all countries in common are striving.

H. E. MACDERMOT

THE DISPENSING OF NARCOTIC DRUGS—A REQUEST TO PHYSICIANS

THE Committee on Pharmacy has been requested by the Pharmaceutical Manufacturers Association to call the attention of all physicians to a certain phase of the Act which is continually involving distributors of narcotic drugs in difficulties with their clients, and puts the supplier in an exceedingly awkward position. Under paragraph 5, such a supplier may not supply any physician save on a written and signed order received from such physician, the following drugs, cocaine, opium, morphine,

heroin, dionine, or cannabis indica, and all preparations of or mixtures containing any of the same. It is a common custom for physicians who find that they are short of one of these drugs to telephone or telegraph to their supply house asking that the drug be forwarded. Should the supplier do so he is liable to a fine of $200 to $1,000, or imprisonment for eighteen months, or both. Therefore suppliers are quite justified and indeed in their own protection must refuse to supply save on a written order, because it is quite possible for an unscrupulous prosecuting authority to telegraph or telephone for a drug in a physician's name, and immediately examine the supplier's records to see whether a signed order has been received prior to the drug being despatched. Consequently, members of the profession are requested not to feel aggrieved if a supplier refuses to deliver the drug prior to his receiving a signed order from the physician in question. The physician also should arrange to receive the drug in person, so that there can be no possibility of endangering the supplier who sells to him in all honesty. The writer believes that pharmaceutical supply houses have already been victims of forged telegrams and false telephone messages as they have been of forged prescriptions. In consequence it is essential that they should be familiar with the signature of the physician to whom they supply such drugs, as they must be subjected to rigorous testing not only of their general honesty and of the possibility of their deliberately infringing the Act, but of technical infractions committed out of sympathy with the doctor and his patients or out of good will. They must adopt a policy which will give them absolute protection, and the physician and druggist must not bear ill will to each other, but should work in co-operation to fulfill honestly and thoroughly the provisions of the Act.

V. E. HENDERSON.

DOCTORS AND R. A. M. C.—SPECIAL INVESTIGATION BY WAR OFFICE

IN *The London Times* appears the following:

"The decision of the British Medical Association to boycott recruitment of officers for the Royal Army Medical Corps until the pension rights of majors on the retired list are re-adjusted may probably stimulate the War Office to deal more rapidly with the problems which have faced it in that service for some time.

"While the resolution of the doctors is expected to make the situation more difficult, it does not raise any new point. The question of retired officers has been the subject of negotiations extending over a considerable period, but the War Office has also had under consideration the whole question of the terms of service for officers in the R. A. M. C. These matters have been forced upon the notice of the authorities owing to the inadequate number of eligible applicants for commissions. It was stated yesterday by a medical man who has been closely associated with the agitation of the British Medical Association that the lack of suitable applicants has already caused the War Office some embarrassment. The Association has expressed the opinion to the War Department that the situation has arisen because of the unsatisfactory conditions of service. This complaint is understood to involve a variety of matters wholly unconnected with the present question of pension rights, including pay and promotion. The Association has made no reference in its resolution to what may be called the current problems, but it is believed that the whole of these matters are being made the subject of a special investigation. It has now become clear that some adjustments will have to be made if recruits in sufficient numbers are to be attracted."

There is the same reluctance in Canada on the part of young medical men to join the Royal Canadian Army Medical Corps. The pay and other emoluments in the Canadian Medical Service is little better than in the infantry in which a young man just out of High School may obtain a commission,

and subsequently be sent to England for one or two years to be educated at the public expense; whereas the physician who has spent six years of his life and at least as many thousand dollars to qualify for a commission in the C. A. M. C., gets no preferential consideration.

Among the remedies to cure this evil, are higher pay for this highly technical professional branch; promotion to the rank of Captain after one year of service; a sufficient number of officers in the corps to permit of at least two being sent to England or elsewhere to take courses, and keep themselves abreast of the times.

This is a matter of vital importance to the profession, as Canada is almost entirely dependent upon the non-permanent militia, and civilian practitioners of medicine and surgery in case of war. The Canadian Medical Association should take action, in order that, should an emergency arise, the profession as a whole may get away upon the right foot.

Editorial Comments

A Request to our Contributors

The Editor would again make a request that manuscripts sent for publication in the *Journal* should be typewritten double spaced. This is important for the editor's work and the printers. Many manuscripts have been sent in recently single spaced adding greatly to the editor's difficulties and also to the printers.

On Canadian Licensure

The Nova Scotia Medical Bulletin for March, 1927, contains a report of the meeting of the Halifax Branch Medical Society at which a special committee in its report on medical education in Canada, put forward the following resolutions as a basis for discussion:—

1st. An attempt should be made to place undergraduate instruction in Canada under central control of some body such as the Dominion Medical Council which will have jurisdiction over the medical curricula and examintions of all Canadian medical schools. This would establish a single Dominion wide licensure and remedy undesirable features of the present system, namely conflicting provincial legislation and unnecessary repetition of examinations for license.

2nd. The requirements by law of discriminatory examinations for the practice of the specialities is not feasible and not in the best interests of the public or the profession.

3rd. As an alternative it is desirable to establish Canadian Colleges of Physicians and Surgeons on similar lines to British institutions. Such bodies could grant advanced degrees, and thus meet in part at least the requirements of those who favour discriminatory legislation for specialists.

4th. The granting of British degrees to Canadians by examinations in Canada is not desirable.

A full discussion of these resolutions brought out *inter alia*, that the right to license was given to the provinces by the British North America Act and would not readily be given up; that the Canadian Medical Act was a compromise: education should not be handicapped by national boundary lines: standardized college requirements should be accepted: any college graduate could begin practice in any specialty he chose: primary examinations for British degrees might be given in Canada.

It was resolved on motion that this report be received and that the local committee be made a part of the Committee on Medical Education of the Canadian Medical Association.

Excellent Health Report

The report of the Provincial Health Officer of Nova Scotia for year ending 1926 shows a satisfactory condition of affairs on the whole. The infant death rate (67.5 per thousand living births) is the lowest rate yet recorded in the province. The tuberculosis death rate remains constant at 121. There have been no epidemics of any extraordinary proportion, except that throat influenza has been present to a rather unusual extent.

A warning note, however, is sounded as to undue optimism. The reporting of diseases in particular is not being strongly enough enforced, especially in regard to tuberculosis. Reference is made to the successful attempt to combine all the provincial forces into one organization for the fight against tuberculosis, and the province has shown its interest in no half hearted way by its grants for equipment.

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A Live Rural Medical Society

A remarkable record of achievement is furnished by the North West Medical Society of Manitoba. In the ten years of its existence the society has held forty-four meetings with an average attendance of nearly fifteen members. When one considers that the number of medical men in the district is twenty-six and that some of the members have to travel over one hundred miles to attend a meeting, the record of attendance is surprisingly good. A part, at least, and that no small one, of the credit for this result is due to the wives of the doctors who have consistently graced the assemblies.

In addition to the regular communications of the Society fifteen public meetings were held and these created much interest. .

While all the members have co-operated the moving spirit in the success of this Society has been Dr. M. C. O'Brien of Birtle, the organizer, first president and present secretary.

Ross Mitchell

Scholarships in McGill University

Announcement is made of the establishment in the Medical School of McGill University of four additional scholarships. Each scholarship has an annual value of $400.00 and is tenable for 5 years. These scholarships are given for the purpose of attracting students, who through lack of means would be unable to take advantage of the course at McGill University. Candidates will be required to present credentials of sufficient scholarships and promise to make them worthy of consideration for such a scholarship. The University reserves to itself the right of withholding the benefits, should the holder disclose at any time that he was not worthy of the consideration granted.

These scholarships have been provided through the generous efforts of Dr. C. F. Martin, Dean of McGill Medical Faculty, in co-operation with four of his friends.

We learn also that E. W. Beatty, Esq., Chancellor of McGill University has endowed two scholarships in McGill University of an annual value of $500.00 each, to be awarded to the candidate who takes first place in classics, and to the candidate who takes first place in mathematics, among students coming up for entrance to the University. At a time when much criticism is made on the value of such educational courses it is gratifying to note that such a practical man as Mr. Beatty endorses the value of both these subjects by such generous scholarships.

Dr. E. W. Archibald of Montreal was elected an Honorary Fellow of the Royal College of Surgeons of London. This adds one more name to the list of Canadians who have obtained this high distinction; one of the highest which can be conferred upon a surgeon by the English speaking profession.

The announcement was made by the Honorary-Secretary of the Royal Society of Canada that Dr. V. E. Henderson, Professor of Pharmacology in the University of Toronto, was elected as a member at the meeting of the Society's Council held on April 8th.

Errata

In Dr. Eisen's paper on "The Anæmia of Cancer of the Gastro-Intestinal Tract" published in our March issue line 3, page 307, right column should read "2 per cent acetic acid" instead of "2 per cent hydrochloric acid."

The Greatest Defect of Group Practice—*American Medicine* quotes the following: "Judging by the expressions of opinion that I have heard from patients about the group method of practice, its greatest defect lies in the feeling of the patient that he has missed a personal interest in himself, and that he suspects that he has not quite understood the results of his examination and has but vague ideas of what it is intended that he should do, largely because no single individual of the group has spent sufficient time considering him and talking to him as a whole organism needing new adjustments. As I myself have subsequently seen patients who have gone to a group for diagnosis, these misgivings of the patient often seem justified."—Henry A. Christion in the *J. Am. M. Ass.*

Toxic Reaction from Phenobarbital (Luminal)—The six cases reported by Arnold S. Jackson, Madison, Wis., have been observed in approximately 500 patients who took phenobarbital. None of these cases terminated fatally, and only temporary discomfort occurred. The characteristic signs and symptoms are the appearance of an erythematous macular papular generalized skin eruption accompanied by intense itching, fever, weakness, vertigo and malaise. Treatment consists in the prophylactic warning of the possibility of a reaction whenever the drug is prescribed. Prompt withdrawal of the drug, the use of local sedatives and elimination sufficed to clear up these cases promptly. A satisfactory and apparently safe dosage consists in giving 1½ grains (0.1 Gm.) before supper for insomnia, or one-half grain (0.03 Gm.) 3 times a day for nervous states.—*J. Am. M. Ass.*, Feb. 26, 1927.

Lister Centenary
1827-1927

WE publish in our issue this month details of the commemoration of the centenary of the birth of Lister as this took place in the universities and large hospitals throughout the Dominion. In the larger cities special meetings were summoned and addresses delivered emphasizing Lister's eminence as a scientist, and calling attention to the unparalleled benefits to the world which followed as a direct sequence of his researches. In many of the large and more important medical centres also throughout the American States, honoured notice was taken of this centenary day, and due acknowledgement was given to the value of Lister's work.

Ceremonies in London

The most brilliant ceremonies, however, took place in London, where representatives of nearly every civilized nation met to offer unqualified honour to Lister and to acknowledge that his researches have effected more for the happiness of the world than those of any other man. The work of no man reaches a high pinnacle of eminence entirely through his own individual productive power. Lister, like Newton, made use of the work of many previous scientists, and was specially indebted to the investigation of the causes of putrefaction carried out by his great French confrère, Pasteur. To Lister alone, however, must be given the credit for the application of the slowly acquired knowledge regarding micro-organisms to the prevention of the septic infection of wounds, and to the amelioration of the frightful conditions then existing in all hospitals. The truth of this statement was fully endorsed by the delegates of all countries, and was emphasized in the many addresses delivered at the gatherings on this occasion.

The first meeting of this centenary celebration took place on the afternoon of April 4th, when a large gathering not only of the profession and of notable scientists, but also of delegates from all parts of the world, assembled in the refectory of King's College Hospital, and listened to an address on Lister by Sir W. Watson Cheyne, one of Lister's first clinical assistants in London. Sir Watson Cheyne began his address by calling attention to the fact that it was just fifty years ago that Lister was offered by the authorities of King's College Hospital the appointment to the chair rendered vacant by the death of Sir William Fergusson. The offer came as a surprise to him. For eight years he had filled the chair of Surgery in Edinburgh, and he looked back upon them with pleasure, and referred to them in after years as the happiest and fullest of his life. He decided, however, after much thought to accept the offer, but announced when taking leave of his large class of students, that it was only a sense of duty which impelled him to leave the school where he had received uninterrupted kindness, and to take a cold plunge into what might prove a sea of troubles for him. Looking back upon that decision many have questioned whether it was a wise one on his part. Doubtless he considered that his views would penetrate the medical world more quickly from London than they would from Edinburgh, but for several years he was conscious of what has been called, "the colossal apathy," and "the inconceivable indifference to new ideas" shown by the students and surgeons of the London hospitals. London, and for the most part England, proved during those early years the truth of the old proverb that a prophet is not without honour, save in his own country. Bacteriology in London was non-existent as a science. The connection of fermentation to the healing of wounds was scouted and even ridiculed. King's College was a small school compared with some of the other schools of London. The four hundred students that had filled his halls in Edinburgh were replaced by a few score and the numbers of these dwindled rapidly. Even the nursing sisters in his hospital made fun of his copious ablutions and the numerous purifications ordered by him before a patient was allowed to be touched. His methods were regarded by the greater portion of the profession as but another variant of many previous empirical and hopeless efforts. Nevertheless, although London surgeons and students were apathetic over the revolution in surgical methods which was being wrought in their midst, it was not so with the many foreigners who visited his ward. Europe even then was re-echoing with the praise of Lister himself and his methods. The address was received with great interest by all present.

On the following day, the morning of the 5th, the King held a reception at Buckingham Palace, and received the delegates from 22 different countries and 62 British institutions. In his reply to an address His Majesty referred to the wonderful revolution which had taken place in surgery; a revolution which he

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attributed partly to the introduction of anæsthesia, but in still greater measure to the antiseptic methods of Lister.

In the afternoon a reception was held in the great assembly hall of the British Medical Association building, at which Sir Ernest Rutherford, president of the Royal Society, occupied the chair, and the numerous delegates and guests were received by the Prime Minister. Congratulatory telegrams were received from the Imperial Academy of Tokyo, and the State Institute of Experimental Medicine at Leningrad. In a brilliant address Professor Henri Hartmann, of Paris, expressed his pleasure in conveying the homage of the Academy of Medicine to the memory of Lister, and said French surgeons before Lister—Declat, Lemaire, Maisonneuve and Demarquar—had used carbolic acid in the treatment of wounds, but with indifferent success. Lister had obtained his results because he built up his method on a scientific basis and the world had benefited from his science. Professor Max Gruber, of Munich, in his address of appreciation, characterized as the three greatest advances in the prevention of disease, vaccination originated by Jenner; the method for the prevention of puerperal fever introduced by Semmelweiss, and the antiseptic treatment of wounds elaborated by Lister. Thanks to the methods taught us by Lister, surgery had made greater conquests during the past two decades than in the previous two milleniums, and German surgeons had had an important share in that triumph.

In the late afternoon of the same day the president and council of the Royal Society held a reception within the halls of the Hunterian museum, where again a brilliant gathering of foreign delegates and eminent representatives of science and the medical profession assembled.

In the evening a dinner, at which the Lord Mayor of London and the Lord Provost of Glasgow were both present, was given by the Merchant Taylors Company in their famous Hall. Professor Nicolaysen, of Norway, and Professor Irving Cameron, of Toronto, replied to the toast of the delegates. Sir John Rose Bradford, in proposing the toast of the Master of the Merchant Taylors Company called attention to the fact that while the Royal College of Physicians of London held special festival in honour of Harvey, and the Royal College of Surgeons of England did the same for John Hunter, the City of London had conferred its freedom on Lister and named him as their great Master in Science.

On the morning of April 6th, commemoration service was held in Westminster Abbey and an address was given by the Bishop of Birmingham.

In Glasgow the Lister Centennial was celebrated by a commemoration service in the cathedral to which the clergy, corporation and academic representatives walked in procession. A civic luncheon followed at which the Lord Provost presided, and Sir John Bland Sutton proposed the toast to the illustrious memory of Lord Lister. In the afternoon many representatives visited Kelvingrove Park and laid wreaths at the foot of Lister's monument.

THE COMMEMORATION OF LISTER'S CENTENARY IN CANADA

To Dr. John Stewart of Halifax, Nova Scotia, a former house surgeon of Lister, must be given the credit of having taken the initiative in establishing "Lister Day" in Canada as an annual event. At his suggestion the Canadian Medical Association undertook to further the project and a circular letter was issued to the profession, signed by Dr. Stewart and the president-elect, Dr. F. N. G. Starr, advocating the institution of Lister Day. The Secretary of the Canadian Medical Association passed the suggestion on to the Secretary of the American Medical Association and through this channel the idea was sent broadcast throughout the United States. As a result we learn that on the 5th of April, Lister Day was widely observed over the entire North American continent.

In Nova Scotia

Lister Day did not pass without appropriate recognition in Nova Scotia. In Halifax essays descriptive of the great surgeon's life and work appeared in the newspapers, and a special session of the Halifax Medical Society was held, at which Dr. John Stewart delivered an address on the work of his much revered chief. At Dalhousie University references to Lister's work were made by almost all the lecturers, and a special meeting of the medical students was called to listen to an address on Lister by the Dean. At the Dalhousie Clinic a large portrait of Lister bearing an explanatory card was placed where it attracted the attention of all who entered. In many of the hospitals throughout the province the day was also suitably recognized.

In Quebec

In Montreal, *McGill University* paid its tribute to the memory of Lord Lister by holding on April 5th a meeting of its professorial staff and the students in the Faculty of Medicine at 10 a.m., in the Moyse Hall. Sir Arthur Currie occupied the chair, and in introducing the speaker, Professor John Tait of the Department of Physiology in the University referred to Lister as one of the greatest benefactors of the world, an Englishman whose scientific work had saved more lives than that of almost any other man. Professor Tait commenced his address* by stating that no story of Lister is complete unless it contains reference to the early work

* A brief abstract only is presented here. We hope to publish it in full at a later date.

of Lister on the problems which at that date were engrossing the attention of physiologists. Lister was always very modest in speaking of his work, and not till 1900, in an address delivered before the students of Charing Cross Hospital, did he himself refer to these early researches of his while a student in University College, and afterwards when working in Edinburgh under Professor Syme. His father whose skill had raised the compound microscope from little better than a toy to a wonderful instrument for research, equipped him with his first microscope, and it was a good one. This he at first employed with keen enthusiasm in verifying many details of histology. Later on, after graduation, inspired by the clarity and stimulating quality of Professor Sharpey's lectures in physiology, he developed a profound interest in physiological science, and for several years carried out in Edinburgh what we must all consider now as astonishingly important and original physiological research work, before he reached the final discovery that made his name live for ever. Professor Tait recounted the story of his persistent investigation into the causes inducing the coagulation of the blood, a theme which was occupying the attention of all physiologists at that time, and for which many explanations by many physiologists had been made both in England and in Germany. By carefully repeated experiments Lister first proved that the reasons given by previous investigators were imperfect, and finally by repeated experiments of his own devising he at last produced evidence that the cause of coagulation was the contact of the blood with foreign substances. The next step was to demonstrate the important part that the blood cells themselves played in this process. Professor Tait in closing emphasized Lister's originality and his amazing capacity for devising experiments; an inventive capacity which manifested itself in every problem that he attacked. The lecturer claimed that the profession to-day as it looks back upon the past recognizes more fully than it did before, the wonderful experimental genius of this really great man.

In the *University of Montreal* Professor Eugene St. Jacques delivered a lecture on Lister and his work to the students of the University.*

In Ontario

At the University of Toronto

In celebration of the centenary of Lister's birth the University of Toronto had, as their guest, Dr. William J. Mayo of Rochester, Minnesota. At 11 o'clock in the morning Dr. Mayo delivered the first Balfour lecture to a large audience in Convocation Hall, consisting of some 2,000 persons, including students, staff and the general public. The body of the hall was occupied by the students, the general public were in the galleries, and the staff were assembled in academic costume upon the platform. His honour the Lieutenant-Governor of Ontario, the Premier of the Province, and the Chancellor of the University of Toronto were with the staff. The President of the University was unavoidably absent. It is of special interest to note that with the Faculty were Dr. F. LeM. Grasett and Dr. E. St. George Baldwin both of whom had been house surgeons of Lord Lister. The lecturer was introduced by the Chairman of the Board of Governors, the Honourable Dr. Cody, who spoke of the significance of the event which was being celebrated. He also announced that it had been determined to have the Donald Church Balfour lecture on Lister day as an annual event in the future. This lectureship has been established through the generosity of one of the former graduates of the university, a Canadian by birth, Dr. Donald Balfour, who is now a surgeon of international repute in the Mayo clinic at Rochester.

Dr. Mayo chose as the theme for his lecture, "The Relation of the Basic Medical Sciences to Surgery". This lecture, which will be published *in extenso* in our June issue, was listened to with intense interest. It consisted of an analytical study, with an historical setting, showing the relationship between scientific discovery and the progress of medicine and surgery. Dr. Mayo paid a tribute to the work and life of Lister, linking his name with that of Pasteur, and referring to them as "two men whose work stamped out the plagues of infection and communicable diseases and added thirteen years to the average lifetime of man."

On the evening preceding the lecture, his honour the Lieutenant-Governor of Ontario, entertained a large gathering of representative citizens at dinner to meet Dr. Mayo. On Lister day the Dean of the Faculty of Medicine had a luncheon at the York Club with the lecturer as his chief guest.

At Queen's University, Kingston

By special decree of the Faculty, Tuesday, April 5th, was observed in the university as a holiday. All medical students were asked to attend the formal meeting held in Convocation Hall where addresses were to be delivered in commemoration of the day. Invitations to this meeting were issued to the members of the Kingston and Frontenac Medical Society. A cousin of Lord Lister's, resident in the city, was also present. At the meeting, the Principal, Rev. Dr. Bruce Taylor presided. Present with him on the platform were the Dean, Dr. J. C. Connell, and the teaching staff of the school. The first address was delivered by Dr. Thomas Gibson on Lister, the Man. Professor L. J. Austin spoke on Lister, the

* An abstract of this will appear in our next issue.

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Surgeon, and Professor James Miller read a very interesting paper on Lister, the Scientist,* in which he began by referring to the remarkable resemblance that was noticeable in the early life and scientific education of Joseph Lister and William Osler. Both were brought up in godly households and both had, in consequence, a serious outlook on life. Both were directed into their scientific life-work by early tuition in microscopic biology, and as a consequence both started their studies with an unusual training. Osler owed his to the teaching of Johnson of Trinity College, and afterwards to that of Dr. James Bovell. Joseph Lister owed his to his father, who, with his knowledge of lenses and his love of the microscope and all that it revealed, instilled the principles of accurate observation and technical skill into his boy's brain. As a consequence, at the age of 14 we find the lad dissecting a sheep's brain, drawing skeletons, and with his brother's help, setting up the whole skeleton of a frog—"so that it looked just as if it were going to take a leap"—on a piece of wood which, as he wrote to his father, he had stolen out of one of the drawers of his sister's cabinet.

During his undergraduate career, two men exercised a very stimulating influence on his earlier scientific work. One was Wharton Jones, the ophthalmic surgeon; the other William Sharpey, the Professor of Physiology in University College. The latter was a great personal friend of Professor Syme of Edinburgh, and this friendship had a potent influence in determining the course of young Lister's life.

An early research carried out during his college days was the confirming and extending of the work of Professor Kolliker on the eye. Not only did he repeat Kolliker's work and confirm it, but he demonstrated the fact that there were two distinct muscles in the iris—a dilator and a sphincter. Shortly afterwards, he confirmed the existence of non-striped muscle-fibres in relation to the hairs of the skin, and proved for the first time their presence in the scalp. In estimating this fine histological work, we must remember that Lister had none of the modern conveniences, such as fixatives, embedding-media, microtomes and stains. He obtained his sections by placing his material between two thin pieces of deal, and cutting with a sharp razor fine shavings of wood and scalp together. The sections were examined under the microscope, un-stained. Papers describing these two researches of his were published in the *Quarterly Journal of Microscopical Science.*

Notwithstanding this strong trend towards histological research, Lister maintained his determination to be a surgeon. Hence his next move was to Edinburgh, carrying an introduction to Professor Syme from Sharpey. Apparently an immediate, almost an instinctive, attraction developed between these two men, Syme and Lister. Lister appears from the very first to have greatly admired Syme, and Syme offered Lister the post of his private assistant, and afforded him every facility for research. He also apparently offered an open house to Lister, and it was not long before Lister became his prospective son-in-law. It proved a fortunate marriage. Agnes Syme became in every respect a true and worthy helpmate, taking a keen interest in all the details of his work, and on many occasions spending hours writing to his dictation.

When preparing for his first course of lectures on "Systematic Surgery", he began one of the most important of his pathological investigations on the "Early Stages of Inflammation", in order as he states in a letter to his father, that he might speak from personal knowledge; he described with what intense interest he watched the circulation in a frog's foot, and its changes under the application of hot water as a stimulant. First, dilatation took place with an increased flow of blood, and as the water applied became hot and finally scalding (200° F.), the dilatation became extreme and an enormously increased flow of blood occurred with the capillaries admitting three or four blood corpuscles abreast instead of only one as seen at the first. Gradually the capillaries became more distended, and the movement of the red corpuscles grew retarded and finally stagnant. The experiments were all successful, and all told the one uniform tale, exploding the false theories of two or three authorities, and confirming and adding to the correct theories of others. "Although," as he added, "no one before me has, I believe, told the tale just as it ought to be told." The success of this investigation greatly improved his spirits, and enabled him to look forward with more hope to his course of lectures.*

The first Edinburgh period was occupied by other important pieces of work; among them was one on the coagulation of the blood, and another on spontaneous gangrene. His work had been presented in papers read before the Medico-Chirurgical Society of Edinburgh, and the President for that year, in his valedictory address, said: "Mr. Lister has made several communications on the bearing of blood and the blood-vessels to each other, affording information both valuable and suggestive; in these communications the Society is glad to recognize the ring of true metal; we do not doubt that Mr. Lister is destined by further observa-

* A brief abstract only is here presented.

* The results of these experiments were given in an address before the Royal Society at London, June 18, 1857, in which he dealt not only with the facts but with an explanation of some of the results he observed.

tion and research to make important additions to knowledge in that Department of Pathology."

Notwithstanding this success in teaching and in scientific work, his private practice was evidently only small, for Mrs. Lister once referred in a letter to "poor Joseph and his one patient." Want of patients notwithstanding, the young surgeon shortly afterwards was elected to the Chair of Surgery in the University of Glasgow, out of a field of seven candidates.

The years of 1860-1869, the period of the Glasgow Professorship, were the most fruitful of Lister's life; for it was during this time that the antiseptic method of treating wounds was elaborated by Lister. Other surgeons before him had used antiseptic substances to destroy suppuration after it had started. Lister realized that it was more important that he should prevent sepsis than attempt to destroy it when it had arisen. Pasteur's work had been before the public for some years. Others before Lister used disinfectants, but it was Lister alone that built up a method for preventing suppuration. Although at first the air was regarded as the source of trouble, Lister soon ceased to lay all the blame upon it. Indeed, the story is told that with Sir John Batty Tuke, Lister went one night in 1854 to look at a case in the hospital. On taking down the dressing, the wound was found healed everywhere except in one place where a ligature protruded. Tuke suggested as the cause of the local trouble the irritation of the silk. "No," said Lister, "Not of, but in, or on."

As is usual with the work of great reformers, Lister's work was not universally received with acclaim. Ill-informed criticism was levelled at it from many directions; perhaps the most unfortunate, was the attack by Sir James Y. Simpson of Edinburgh.

In concluding his address, Professor Miller said that there is in such a life something that one can only call inspiration—a God-given gift of seeing a big end, and the way to attain it; the end may not be easily reached; the inspired mind appears to leap over obstacles insurmountable to the ordinary run of human brains, but in all cases there is much plodding, and much opposition, and the desired summit is only gained after a long and weary climb. But how well worth while it all is in the end! The reward is indeed great. At the conclusion of the addresses Principal Taylor in a few well chosen words emphasized the remarkable and beneficent nature of Lister's work and the singularly charming and retiring character of the man.

At the University of Western Ontario, London

In connection with the celebration of Lister's Centenary by the Faculty of Medicine in this university, an address on Lister was given by one of the senior students, Mr. D. S. McHaffie. At the same time in the library, a display took place of interesting implements associated with the early days of antisepsis including an early type of carbolic atomizer. Arrangements have also been made to have a special Listerian lecture delivered next month when the new operating rooms of the Victoria Hospital are to be opened.

IN MANITOBA

The centenary of Lister's birth was suitably commemorated in *Winnipeg*. The public press published several leading articles on the life and work of Lord Lister. Addresses on the same subject were also given in the schools. A special meeting was called in the Faculty of Medicine which was addressed by Dr. R. A. Blanchard, LL.D., a former dresser and house surgeon of the chief in his Edinburgh days, and was largely attended by the students and members of the profession in the city. In the evening Professor William Boyd gave an address in the University Building which was open to the public and largely attended, and of which the following is an abstract:—

"While the most of us wander through life like children in a museum, delighted with the strange things around us and finally pass out with little achieved, there are some men who stand out and apart from their fellows as Alpine peaks stand above the surrounding plain, and it is to these that man has turned, right through the ages, for help, hope and inspiration. These are the heroes and these are the men whom we delight to honour. History magnifies the battlefield where men have met pain and death. There are, however, truer heroes, the real benefactors of mankind, and this evening we are gathered to recount the debt we owe to one whom we are proud to claim as an Englishman. Through the many centuries which have passed since the earliest beginning of scientific medicine progress had been pitifully slow in the art of healing. Until the middle of the nineteenth century nothing was known as to the real nature and cause of the vast group of diseases due to infection by micro-organisms. A curious condition had arisen in surgery. The introduction of anæsthesia in 1845 had first served as a tremendous stimulus to this branch of medicine, for the patient was no longer racked by torment during the performance of an operation, but the dreadful conditions with which the surgeon found himself confronted in his hospital work, the so-called surgical hospital diseases took the heart out of both patient and surgeon. Of these diseases there were four principal ones, erysipelas, pyæmia, hospital gangrene and tetanus. It is difficult and almost impossible for us at the present day to realize the havoc, which these diseases wrought before the epoch making year of 1865. Hospital gangrene was

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the worst of the plagues. The horrible condition in which the death of the part affected took place, turning green and black and then decomposing with a fearful smell, so that around every bed hung the fetid smell of decomposition. The uncertainty attendant on every operation was terrible to surgeon and patient alike, and the element of chance to a great extent paralyzed surgical efforts. Although Pasteur, some years before 1865, had provided all the data necessary for the application of the antiseptic principle, Sir James Y. Simpson did not hesitate to state that the man lying on the operating table in one of our surgical hospitals is exposed to more chance of death than the English soldier on the field of Waterloo. John Bell in his *Principles of Surgery* wrote that "when hospital gangrene rages in a hospital, it is like a plague. Few seized with it can escape; every wound becomes a sore, and every sore is apt to run to gangrene." Contrast with this dreadful picture of hospital wards in the past the present surgical wards of our Winnipeg Hospital and you will agree with me that the man whom we honour to-night is indeed one of the great heroes of the world. Lister studied medicine at University College Hospital, and after serving there as house surgeon, moved to Edinburgh to continue his studies under Syme. A little later we find him giving a course of lectures on the principles of surgery, and so driven was he in his day's work that he often went to bed at two and got up at four to finish the lecture which he had to deliver at half past eight in the morning. After seven years in Edinburgh, Lister was appointed Regius Professor of Surgery in the University of Glasgow, a Government appointment in which polities sometimes plays a part, so that at the time the *Glasgow Herald* was rather incensed that this young man from Edinburgh should get this coveted position. At that time the true cause of the suppuration of wounds was unknown, and was attributed chiefly to the mysterious influence of some gas in the air, and oxygen in particular was blamed. Yet Leeuwenhoek peering through his microscope in the seventeenth century had recognized the presence of these tiny animalcules; Pasteur had published his researches on the fermentations of beer and wine; Deveine had discovered the first disease-producing bacterium and had demonstrated its ability to produce anthrax, and Lemaire had written a book on carbolic acid. Lister's attention was drawn to these papers by the professor of chemistry, and especially to Pasteur's demonstration that the fermentation of wine was due to the activity of living minute organisms, organisms that had long been revealed by the microscope and regarded as mere accidental concomitants of putrescence. Lister at once realized the tremendous significance of Pasteur's work. Curiously enough he did not start with the simpler task of keeping a clean wound clean, but grappled with the infinitely more difficult one of attacking the germs in a wound already infected. His mental attitude was the opposite of that of an editorial writer in the *Lancet* even some years later, "The germ theory may be perfectly well founded, but nine surgeons out of ten do not care much whether it is or is not, so long as they cure their cases and reduce their mortality to the lowest possible degree." Lister ever kept his mind open to the reception of new truth, and as the result of his experiments he gradually gave up the spray, his methods became ever more simple, and in 1867 he was able to report that during the past nine months in his hospital not a single case of pyæmia, erysipelas or hospital gangrene had developed in his wards, and this was certainly not because of the salubrious situation of these wards. This was the birth of modern surgery, and was so recognized a year or two later by Lucas-Championiere, the great French surgeon, who said that the whole of surgery was born from Lister; active surgery, the surgery of operating, began with him. And so on this day of commemoration we remember our hero, and repeat the words of Handel's lovely anthem as sung by the boys' choir at his funeral in Westminster Abbey:—

"When the ear heard him, then it blessed him, and when the eye saw him it gave witness of him: he delivered the poor that cried, the fatherless, and him that had none to help him. Kindness, meekness and virtue were on his tongue. If there was any virtue, and if there was any praise, he thought on those things. His body is buried in peace, but his name liveth for evermore."

In Alberta

The centenary of the birth of Lister was commemorated in *Edmonton* by an open meeting of the Academy of Medicine to which the public were invited. The meeting was presided over by the Lieutenant-Governor Dr. Egbert. In an address by Colonel F. H. Mewburn, an interesting sketch of the career of the famous English surgeon was presented. His name and work must always be associated with that of Pasteur who was the first to show that putrefaction was a form of fermentation caused by micro-organisms, and that their action could be destroyed by a variety of agents such as heat, sunlight and chemicals. But Pasteur was not a medical man, and Lister as the man watching on the hilltop stepped in and applied the scientific findings of Pasteur to surgery, showing how necessary it was that micro-organisms be kept from wounds. Lister began his work with chemicals, using at first carbolic acid in

his surgical technique, but later on insisted on asepsis rather than antisepsis. Colonel Mewburn was followed by Professor J. J. Macleod of Toronto, who in speaking of the relation of physiology to medicine showed how Lister built up a physiological foundation for his studies and researches, and how his mind, trained in physiological concepts, was ready to grasp the importance of Pasteur's work, and realize its significance and apply his reasonings in his surgical technique. After referring to the work of physiologists in general Dr. Macleod concluded his interesting address by stating that the place of physiology in medicine is to teach us to apply the known facts of the three sciences, physics, chemistry and biology, to the interpretation of the problems of living bodily tissues, and thus enable us to comprehend to some extent life and the reaction of living tissues to disease.

Men and Books

LISTER

Lister was born in 1827. He died in 1912. During his lifetime there was wrought a revolution in surgery; and in medicine also, for all medicine is one. For this revolution he was responsible. No such revolution has been known in the world's history, for it was wholly beneficial, and it is, and will be enduring so long as human life endures. Lister was a doctor, trained at University College, London. His first experience of the surgical wards was a shock to him. It is thought that his very first case was one of phagedænic gangrene, one of the most terrible of the septic diseases that were so commonly the consequence of the accidental tearing of the body or of purposeful operation. He never forgot that case, and he turned his mind early to research into the causes and processes of inflammation. Many others had done the same for years, even centuries. But death took the same fearful toll of injuries, and the risks of operation were so appalling that none was attempted save where death was certain if it were not done. Maternity wards belied the name, they were death wards. In 1862 a committee of Florence Nightingale's opened special wards in "the new part of King's College Hospital" for midwifery cases. "Every precaution had apparently been taken to render them safe." In five years the mortality from puerperal fever was so great that the wards were closed. The surgical ward of those days was a place of horror. The eye was distressed with the sight of patients in the extreme of hectic fever; the nose was assailed with nauseating smell.

Why did wounds putrefy? Many asked the question; there were many answers. Air was fatal, it was excluded. Air was good, it was given. Domestic cleanliness was tried; overcrowding gave place to space; but still the deadly poison worked. "Miasma" said most, saving their face and ignorance with a word. A word that held some hint of a mediæval inheritance of a belief in the demoniac powers of the air. A fierce theological controversy raged about the possibility of "spontaneous generation," and thereupon came proof that nutrient fluids, which soon gave signs of abounding life when those fluids were exposed to ordinary conditions, remained sterile and dead when freshly cooked and sealed from the air. Pasteur in 1860 conclusively proved that yeasts did not grow *de novo*; and following this he applied the idea to the prevention of putrefaction in industrial processes with the immediate saving of some threatened industries.

Three men saw the wider bearing of these discoveries: Jules Lemaire, Spencer Wells, and Joseph Lister. Lemaire was a learned family doctor fond of surgery; he saw that the bad effects of surgery might arise from bacteria, and used carbolic to check the process, but he spoiled his work by supposing that he had found a "cure-all". Spencer Wells in 1864 gave a brilliant résumé of Pasteur's work and its bearing on surgery, but he did not follow up his conclusions. Late that year Lister walked home one afternoon with Thomas Anderson, the Professor of Chemistry in Glasgow, who suggested to Lister that he should read the paper on fermentation and spontaneous generation by a young French chemist, Louis Pasteur, of which he then knew nothing. Lister got the papers, and saw that not gasses but germs were what the surgeon had to fear, minute living particles in the air, and that these could be destroyed by boiling. In the same year the town of Carlisle, in trouble with its sewage works which infected the cattle fed on the pastures where the effluent escaped, found that both the foul smell and the risks of disease were stopped when a little carbolic acid was added to the sewage. Lister heard of this, and Anderson got him some of the stuff. It was so crude that it would not dissolve in water, nevertheless it worked, and later the chemists provided a pure form that could be diluted freely with water. Then followed series after series of tests, clinical and experimental. Filled with the idea of the prevention of suffering and the conviction that the ideal could be attained, he devoted his whole energies to this one end. He was well-fitted for the task. His father had been a distinguished

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scientific investigator, and he had given his son a bias and a stimulus for this work. His wife was the daughter of a distinguished surgeon, and ably abetted him; most of his notes were in her handwriting. The days were consumed in work. A squad of enthusiastic assistants gathered round him in Edinburgh. They tried their experiments on animals and on themselves; and then applied the results to their patients. The enthusiasm of his assistants led them to squirt discharges from wounds into their own arms, taking risks that would be horrifying to our knowledge.

Lister later came to King's College, London, and there gained a wider field for his labours, and a success in his endeavours that all the world knows. Opposition there was. The opposition was useful, it ensured the most scrupulous care in the determination of results and the cultivation of accurate technique. But the facts were demonstrable. The younger surgeons were enthusiastic. And now we reap where they have sown.

What sort of man was Lister? I saw him a few times. One time I remember well. He attended the meeting of the British Association at Dover in 1899. Sunday morning I went to the ancient town church, and saw him sitting in front and to the side of my place. My memory tells me that the most part of my engagement in divine service was the watching of this master of men, and my sharp young eyes noted that he slipped a big gold piece into the alms bag. He was a man of middle stature, with a calm impassive countenance, mild blue eyes, soft white hair and slightly ruddy cheeks; not unlike the more familiar picture of the tribune of the people John Bright. My last memory is of the funeral service in the Abbey Church of Westminster, where were gathered doctors from all the world and men of science and representatives of every state that calls itself civilized. They were gathered for one last tribute of reverence and gratitude. I can still hear the melting cadence of the choir as it slowly proceeded from the distant cloisters into the body of the church. Truly his work was the work of a Son of God!

N. Bishop Harman.

THE THIRD CHAPTER IN THE HISTORY OF PATHOLOGY

By A. G. Nicholls, M.D.

Halifax

The seventeenth century saw firmly established the new doctrine that physical science should be based on observation and experiment, and not on authority. The seed sown by Paracelsus and Vesalius now began to bear fruit. The period opened auspiciously with the appearance of William Gilbert's treatise, *De Magnete* (1600), the first book on experimental science to be published in England, or perhaps anywhere. This was followed by Harvey's immortal work, *De Motu Cordis, etc.*, (1628). Their example was quickly imitated and there sprang up a school of experimentalists which, for the time, stood unrivalled: Willis, Lower, Mayow, Boyle, Hooke, and Sir Christopher Wren, in particular. On the continent, Franciscus de la Boë, otherwise called Sylvius, was demonstrating the importance of chemistry. Largely owing to his influence the iatrochemical school came into being, and thus, medicine began to be based on anatomy, physiology, and chemistry. But this was not all. The practice of performing autopsies was becoming more popular, and the importance of morbid anatomy in the scheme of medical study was beginning to dawn upon the more enlightened spirits. Sylvius was probably the first to sound the modern note. Let us quote his own words. "I have led my pupils by the hand to medical practice, using a method unknown at Leyden, or perhaps elsewhere, *i.e.*, taking them daily to visit the sick at the public hospital. There I have put the symptoms of disease before their eyes: have let them hear the complaints of the patients, and have asked them their opinions as to the causes and rational treatment of each case, and their reasons for these opinions. Then I have given my own judgment on every point. Together with me they have seen the happy results of treatment, when God has granted to our cares a restoration of health: or they have assisted in examining the body, when the patient has paid the inevitable tribute to death."

Bonetus of Geneva, who was imbued with the same spirit, and well acquainted with medical literature, performed a great service to medicine when he collected all the recorded autopsies of the sixteenth and seventeenth centuries into one monumental work: the *Sepulchretum*. This production was justly renowned for a 100 years, and gave the first impetus to the systematic study of morbid anatomy. The man who caught the fire was Giovanni Battista Morgagni.

Morgagni, generally regarded as the real founder of the science of morbid antomy, and one of the most noted personalities of his time, was born at Forli in 1682. After a brilliant school career he entered the University of Bologna at the age of 19, graduating 3 years later as Doctor of Medicine and Philosophy, *summa cum laude*. He was soon appointed prosector to Valsalva, who held the important post of "Demonstrator Anatomicus" in the medical school. Here he assisted his master in the preparation of his famous work on the "Anatomy and Diseases of the Ear," and laid the foundation of that power of accurate ob-

servation which was to make him the foremost anatomist of his time. When Valsalva was translated to Parma, Morgagni succeeded to his post, where he very soon made his mark. Even at this early age he showed a tendency to break away from the traditions of antiquity, by insisting on personal observation, and by discouraging the prevalent disposition towards abstract speculation. His lectures also were made more valuable by the demonstration of anatomical preparations, a new and important departure in the art of teaching. His early observations were published under the title of *Adversaria Anatomica* (1707 *et seq.*), of which there are several series, embodying his studies on the larynx, the lachrymal gland, and the female pelvic organs. He made a number of independent discoveries, more especially in connection with the muscles of the hyoid bone, the uvula, and the larynx, and his name is connected to-day with the *sinus* and *hydatid* of Morgagni. After some time, he resigned his position, and gave himself up to researches in anatomy, chemistry, and pharmacy. He then entered on the practice of his profession, and his renown soon brought him a considerable clientèle. He was even sought for consultation by physicians much his senior. *Adeo erat in observando attentus, in prædicendo cautus, in curando felix* ran the eulogy of his confrères.

Tiring of this perhaps, or the scientific spirit proving too strong, he went to Padua, where he eventually became professor of Theoretical Medicine. Three years later he was appointed by the Venetian Senate to the chair of anatomy, thus becoming the successor of an illustrious line of scholars, Vesalius, Fallopius, Gasserius, and Spigelius. From this time on he taught at Padua with the most distinguished success. Among his more celebrated pupils was Scarpa.

Morgagni was a man of magnetic personality, tall, handsome, and robust, with blue eyes and blonde hair. He was immensely popular with all classes of society, and was the friend and favourite of distinguished senators, cardinals and pontiffs. No one of any note came to Padua without meeting Morgagni. All were impressed by his urbanity and outstanding attainments. He seems to have become a little vain. At least, he was not oblivious of fame, "that last infirmity of noble minds," for we read that he was mightily offended when a foreign scientist referred to him without prefixing the designation *illustrissimus* to his name. But little fault could be found with his life. His tastes were simple, and he led an even, contented, and happy life. He was a deeply religious man, and perhaps because of this, a believer in judicial astrology in spite of his strong rationalistic turn of mind. He died in 1771, after a life full of honour and usefulness. Morgagni was a man of profound scholarship and wide sympathies. Apart from his scientific interests, he wrote much on philology, archæology, literature, and history. After the appearance of his *Adversaria*, for the next 20 years his medical publications were few, comprising only the *Novum Institutionum Medicorum Idea*, the *Vita Guglielmini, Notes on Gall Stones, Varices of the Vena Cava, Calculi, and Memoranda* on *Medico-legal Topics*. In 1740 he brought out an edition of the *Works of Valsalva*, with plates, to which he contributed a Life, a Commentary, and many additional notes of his own. It was not till 1761, when he was in his eightieth year, that he published the work that has rendered him immortal. This was the *De Sedibus et Causis Morborum per Anatomem indagatis; Libri quinque* (Venice, Raimondini), which at once leaped into favour, passing through three editions in four years, and, before his death, being translated into French, English, and German.

The inspiration for this epoch-making book was derived, confessedly, from the *Sepulchretum* of Theophilus Bonetus. Morgagni tells us in a very modest way how for a long time he had entertained the project of supplementing Bonetus' work, as he was conscious of many defects in that renowned publication, which he felt he could remedy by bringing to the subject the wealth of his own observations and those of his master Valsalva. But, he adds, "I have had two views in publishing these writings: the first, that I might assist the studies of such as are intended for the practice of medicine: the second, and this the principal view, that I might be universally useful, though this cannot happen without the concurrence and assistance of the learned men in every quarter."

He tells us in an interesting way how the book came to be written. He was enjoying a holiday in the country with a young friend, who was curious in many branches of knowledge. The *Sepulchretum* was referred to, on one occasion, and the young man suggested that Morgagni should place on record his own observations. This he was the more ready to do inasmuch as it coincided with his own inclinations, and it was soon arranged that he should write letters on the anatomy of disease for the instruction of his young companion. In due course the idea was carried out, until 70 letters in all were the result.

The matter is handled in five books, dedicated respectively to Trew, Bromfield, Senac, Schreiber, and Meckel, as representing the five learned societies of which Morgagni was a member. The *first* deals with diseases of the head; the *second*, those of the thorax; the *third*, those of the abdomen; the *fourth*, general and surgical diseases; and the *fifth*, of such other things as may be added to the other four books. The work is based upon some 640 autopsies, occurring for the most part in his own experience, but in a few instances on notes taken from

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Valsalva and Albertini not previously published. His cases are well and systematically arranged, and given with the precision and fulness of modern work. The antecedent circumstances and clinical features are given with sufficient completeness, and are then discussed in the light of the pathological findings.

Affections of the pericardium, valvular disease, ulceration, rupture, dilatation and hypertrophy of the heart, and lesions of the aorta, are very fully dealt with. His account of aneurysm of the aorta remains one of the best ever written. Morgagni gives us the first-recorded case of heart-block. He also gives us the first description in the literature of cerebral gummata, and was the first to show that intracranial suppuration is a sequel of discharge from the ear, and not the other way round, as Valsalva had taught.

His thoroughness and system is well seen in his description of angina pectoris, which is entirely accurate, and probably the first published account of that disorder: "A lady, 42 years of age, who for a long time had been a valetudinarian, and within the same period, on using pretty quick exercise of body, was subject to attacks of violent anguish in the upper part of the chest on the left side, accompanied by a difficulty of breathing, and numbness of the left arm; these paroxysms soon subsided when she ceased from exertion. In these circumstances, but with cheerfulness of mind, she undertook a journey from Venice, purposing to travel along the continent, when she was seized with a paroxysm and died on the spot. I examined the body on the following day . . . The aorta was considerably dilated at its curvature, and in places, through the whole tract, the inner surface was unequal and ossified. These appearances were propagated into the arteria innominata. The aortic valves were indurated . . ." He adds: "The delay of blood in the aorta, in the heart, in the pulmonary vessels, and in the vena cava would occasion the symptoms of which the woman complained during life, namely, the violent uneasiness, the difficulty in breathing, and the numbness of the arm."

Morgagni's reverence for his old teacher everywhere comes out, for whenever possible, he gives Valsalva's opinion first, and then supplements it with his own. Frequently, he goes off into a long digression on general pathology and therapeutics, in which his thorough scholarship comes out in numerous references to the literature. The work differs from the present-day type of text-book on morbid anatomy, in that the author approaches the subject from the clinical side, and the various symptoms determine the order in which the anatomical points are presented.

Morgagni has been criticized for his discursiveness, but he explains that, in order to give the weight of personal experience to his writings, he took care to intersperse other remarks relative to the practice and the history of medicine, with many other things relative to the studies and pursuits of the young gentleman to whom he addressed the letters; this with the farther intention "to withdraw his imagination for a while from the horrid and perpetual idea of diseases and dead bodies."

It was the great merit of Morgagni that he introduced precision into the description of disease, based his views on personal observation, and endeavoured to harmonize the clinical manifestations of disease with the morbid changes in the organs. His work substituted localization for generalization, precision for vagueness. He introduced the "anatomical concept" into semeiology, and was the first to teach the necessity of basing diagnosis, prognosis and treatment on post-mortem findings. Farther, morbid anatomy was of value, even when it did not contribute directly to the cure of disease, from the fact that it threw light on the problems of normal anatomy and physiology and suggested the lines along which palliation might be attempted. It is to Morgagni that we owe the aphorism that "Observations should be weighed and not counted." It may truthfully be said of him that he once and for all established on a firm and proper basis those great principles which underly our modern methods of scientific research. There is some irony in the fact that the new viewpoint placed on a broad scientific basis Sydenham's great conception of a "natural history of disease," for Sydenham could see no value in post-mortem examinations. Morbid anatomy is the legitimate offspring of normal anatomy, and Morgagni is thus the scientific son of Vesalius, Fallopius, Fabritius, and Valsalva.

Osler (Silliman Lectures) gives us this estimate of Morgagni: "In close correspondence with the leading men of the day, with the young and rising teachers and workers, his methods must have been a great inspiration; and he came just at the right time. The profession was literally ravaged by theories, schools, and systems—iatromechanics, iatrochemistry, humouralism, the animism of Stahl, the vitalistic doctrine of Van Helmont and his followers: and into this metaphysical confusion Morgagni came like an old Greek, with his clear observation, sensible thinking, and ripe scholarship." Sprengel also, well remarks that, "It is hard to say whether one should admire most his rare dexterity and quickness of dissection, his unimpeachable love of truth and justice in his estimation of the work of others, his extensive scholarship and rich classical style, or his downright commonsense and manly speech."

Association Notes

Programme

THE FIFTY-EIGHTH ANNUAL MEETING OF THE CANADIAN MEDICAL ASSOCIATION TO BE HELD IN TORONTO ON JUNE 13, 14, 15, 16, 17, 18, 1927

In Conjunction With

The Ontario Medical Association
The Canadian Public Health Association
The Canadian Tuberculosis Association
The Canadian Society of Anæsthetists
The Canadian Radiological Society
The Ontario Radiological Society

HEADQUARTERS—THE UNIVERSITY BUILDINGS

Registration will commence at nine o'clock on the morning of Monday, June 13th, in the Exhibition Hall, University College, and will continue throughout the week.

The first two and one half days of the week are largely devoted to the Business Sessions of the various Associations. The Scientific Programme commences with the afternoon session of Wednesday, June 15th.

An examination of the programme herewith presented, will disclose the fact that talent of a very high order has been secured for the meetings.

Particular attention is directed to the announcements from the various Committees, all having to deal with the general arrangements for the meeting, looking to the comfort and happiness of the members and their friends.

SKELETON PROGRAMME

Monday, June 13th

Daylight saving time.

10.00 a.m.—Meeting of Canadian Medical Association Council. *Hart House.*

1.00 p.m.—Council luncheon, as guests of the President-elect, Dr. F. N. G. Starr. *Hart House.*

2.15 p.m.—Meeting of Canadian Medical Association Council. *Hart House.*

7.00 p.m.—Council will be dinner guests of the Academy of Medicine, Toronto. *Hart House.*

7.00 p.m.—Annual Dinner Meeting Canadian Tuberculosis Association. *Christie St. Military Hospital.*

Tuesday, June 14th

9.30 a.m.—Meeting of Canadian Medical Association Council. *Hart House.*

9.30 a.m.—Meeting of Canadian Tuberculosis Association with Medical Staff of Department of Soldiers' Civil Re-establishment. *Christie St. Military Hospital.*

1.00 p.m.—Council luncheon, as guests of the Chairman of Council, Dr. A. Primrose. *Hart House.*

2.00 p.m.—Meeting of the Committee on General Purposes of the Ontario Medical Association. *Osler Hall, Academy of Medicine.*

6.00 p.m.—Meeting of Nominating Committee of Ontario Medical Association. *Osler Hall, Academy of Medicine.*

7.00 p.m.—The Ontario Medical Association annual dinner and round table evening; guests—the members of the Canadian Medical Association Council. The programme will be in charge of the Committee on Inter-Relations of the Ontario Medical Association. *Hart House.*

8.15 p.m.—Annual Meeting, Canadian Public Health Association. *Physics Building, University of Toronto.*

Wednesday, June 15th

9.00 a.m.—Clinics will be arranged in the various hospitals (See Bulletin Boards.)

9.30 a.m.—Meeting of Canadian Medical Association Council. *Hart House.*

12.30 p.m.—Luncheon, and formal opening of the convention. *Hart House.*

2.00 p.m.—Report of Nominating Committee Ontario Medical Association. General Session in Convocation Hall.

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4.30 p.m.—Garden Party at Government House, Chorley Park, guests of His Honour the Lieutenant-Governor of Ontario, and Mrs. William Donald Ross.

7.45 p.m.—The annual Dinner Dance—Hart House.

Thursday, June 16th

9.00 a.m.—Sectional meetings. *University College.*

2.00 p.m.—General Session—Convocation Hall.

4.30 p.m.—Garden Party at "Donalda," and inspection of Model Farm, guests of Mrs. D. A. Dunlap.

Thursday night—Alumni Dinners and Class Reunions. *Note*: In order that these may be posted on the Bulletin Board, please notify the General Secretary.

Friday, June 17th

9.00 a.m.—Sectional meetings.

2.00 p.m.—General Session—Convocation Hall.

4.00 p.m.—Visit to the School of Hygiene and Connaught Laboratories, followed by a motor trip to the University Farm.

8.30 p.m.—Second Listerian Oration, (*Convocation Hall*) delivered by Sir Charles Scott Sherrington, G.B.E., M.D., D.Sc., F.R.C.P., LL.D., Oxford, Eng.

Saturday, June 18th

9.00 a.m.—The various Sections are arranging clinics, ward rounds, etc., in the several hospitals, at which distinguished visitors will take part. Full particulars will be found on the Bulletin Boards, *University College.*

GENERAL SESSIONS

Place of Meeting—Convocation Hall

Wednesday, June 15th
2.00 p.m.

Lesions of the arteries of the extremities.
Dr. Dean Lewis, Baltimore.

Post-partum care.
Dr. B. P. Watson, New York.

Eczema in infants and children.
Dr. C. G. Kerley, New York.

Septic infections of the bronchi.
Dr. D. A. Stewart, Ninette.

Maternal mortality.
Dr. Helen MacMurchy, Ottawa.

Thursday, June 16th
2.00 p.m.

Otolaryngology and the general practitioner.
Dr. G. E. Shambaugh, Chicago.

Paget's disease of the nipple.
Sir G. Lenthal Cheatle, K.C.B., F.R.C.S., London, England.

The myocardium.
Dr. J. Strickland Goodall, M.R.C.P., F.R.C.S., F.R.C.E., London, England.

Primary tumours of the lung.
Dr. Oskar Klotz, Toronto.

Neoplasms in the lung.
Dr. W. A. Evans, Detroit.

Friday, June 17th
2.00 p.m.

Symposium on the gall bladder.

Radiology —Dr. Everts Graham, St. Louis.

Pathology —Dr. Wm. Boyd, Winnipeg.

Medicine —Dr. Thomas McCrae, Philadelphia.

Anæsthesia—Dr. Wesley Bourne, Montreal.

Surgery —Dr. Charles Gordon Heyd, New York.

PROGRAMME FOR SECTIONAL MEETINGS

Section of Anæsthesia of the Canadian Medical Association, meeting with the Canadian Society of Anæsthetists

Place of Meeting.—Room 12, University College.

Wednesday, June 15th

9.00 a.m.—Address of Welcome.
Dr. A. J. Mackenzie, President of the Academy of Medicine, Toronto, 1926–27.

Presidential address.
Dr. D. D. Freeze, Vancouver.

Indications for intratracheal anæsthesia.
Dr. C. C. Stewart, Montreal.

Post-anæsthetic anoxemias.
Dr. John H. Evans, Buffalo.

Effect of anæsthetics on the body as a whole.
Dr. Wm. Webster, Winnipeg.

2.00 p.m.—Session to be held at Department of Pharmacology. *Medical Building.*

Anæsthesia in thyroid surgery.
Dr. Thomas Hanley, Toronto.

Demonstration by
Dr. W. Easson Brown, Toronto.

Post-operative acidosis in children.
Dr. Charles Robson, Toronto.

Thursday, June 16th

9.00 a.m.—Hospital clinics—Demonstration of various types of anæsthesia.
(A Bulletin of operations and types of anæsthesia to be demonstrated, will be issued).

2.00 p.m.—Some points concerning the training of anæsthetists.
Dr. A. L. Flemming, Bristol, Eng.

Consumption of oxygen in health, disease and anæsthesia.
Dr. Allan Rowe, Boston.

The surgeon and the anæsthetist.
Dr. A. Primrose, Toronto.

The chemical basis of the efficiency and toxicity of local anæsthetics.
Dr. John S. Lundy and Arnold Osterberg, Ph.D., Rochester, Minn.

Friday, June 17th

Place of Meeting—Room 19, University College

9.00 a.m.—Carbon dioxide—its place in anæsthetic technique.
Dr. R. M. Waters, Kansas City.

The application of gaseous anæsthetics in unusual types of operations and in patients with unusual complications.
Dr. E. I. McKesson, Toledo.

Studies in the intoxication of ether nitrous-oxide, acetylene, propylene, ethylene, and chloroform anæsthesia.
Dr. V. E. Henderson, Toronto.

Observations on some current advances in anæsthesia.
Dr. F. H. McMechan, Avon Lake, Ohio.

2.00 p.m.—Combined meeting with the Canadian Medical Association.
Symposium on the Gall Bladder.
Dr. Wesley Bourne, Montreal, will deal with the subject from the view point of the anæsthetist.

Saturday, June 18th

9.00 a.m.—Demonstrations of various types of anæsthesia at the hospitals. Bulletin will give definite information. See Bulletin Boards, University College.

EYE, EAR, NOSE AND THROAT SECTION

Place of Meeting—Room 19, University College.

Thursday, June 16th

9.00 a.m.—Methyl alcohol amblyopia.
Dr. Alex. Macdonald, Toronto.

High lights in the progress of ophthalmology during the last twenty-five years.
Dr. George S. Derby, Boston.

Discussion on "The inter-relationship between pathological conditions of the eye, and the nose and throat, embracing headaches, focal infections and acute swellings of the eyelids."
(Different aspects of the above will be the subject of short talks by selected speakers).
Discussion opened by
Dr. G. E. Schambaugh, Chicago.

Hearing and its preservation.
A short paper will be presented, the discussion will be opened by
Dr. G. E. Schambaugh, Chicago.

12.30 p.m.—Luncheon—The out of town specialists in Eye, Ear, Nose and Throat, will be the guests of the Toronto specialists.

Friday, June 17th

Place of Meeting—Room 12 and Croft Room, University College.

9.00 a.m.—Demonstration of interesting clinical cases. (Croft Room).
(A limited number of interesting clinical cases, with properly worked up histories will be seated in specially arranged booths in a room alongside the lecture room).

10.30 a.m.—Tuberculosis of the upper respiratory tract.
Dr. R. S. Pentecost, Toronto.

11.00 a.m.—Discussion on Dr. Pentecost's paper and on the clinical cases.

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SECTION OF MEDICINE

Place of Meeting—Room 37, University College.

Thursday, June 16th

9.00 a.m.—Eczema.
Dr. Harold Orr, Edmonton.

Certain distinct types of renal disease and their treatment.
Dr. Norman M. Keith, Rochester, Minn.

The use and interpretation of blood chemistry by the general practitioner.
Dr. E. H. Mason, Montreal.

The examination of the nervous system.
Dr. Frederic Brodie, Vancouver.

The goitre heart.
Dr. John Oille, Toronto.

Friday, June 17th

9.00 a.m.—Acute rheumatic fever.
Dr. A. H. Gordon, Montreal.

The management of chronic arthritis.
Dr. George C. Hale, London, Ont.

Duodenal ulcer.
Dr. C. S. McVicar, Rochester, Minn.

Asthma.
Dr. W. T. Connell, Kingston.

Angina pectoris.
Dr. G. R. Brow, Montreal.

Saturday, June 18th

Clinics will be held in the various hospitals. Among the speakers will be Dr. Thomas McCrae of Philadelphia and Dr. Charles F. Martin of Montreal.

SECTION OF OBSTETRICS AND GYNÆCOLOGY

Place of Meeting—Room 13, University College.

Thursday, June 16th

9.00 a.m.—Hæmorrhage in pregnancy.
Dr. John D. McQueen, Winnipeg.

Pyelitis in pregnancy.
Dr. L. C. Conn, Edmonton

Pelvic inflammation.
Dr. J. S. McEachern, Calgary.

Nephritis in pregnancy.
Professor V. J. Harding, Toronto.

Description and Demonstration of Kieland Forceps.
Dr. W. R. Patterson, Toronto.

Friday, June 17th

9.00 a.m.—Fibroids.
Dr. F. B. Mowbray, Hamilton.

Management of certain obstetrical emergencies.
Dr. W. P. Tew, London.

Abortion.
Dr. Herbert Little, Montreal.

Ectopic gestation.
Dr. John Fraser, Montreal.

Pre-natal care.
Dr. J. W. Duncan, Montreal.

Prolapsus uteri.
Dr. George Hooper, Ottawa.

Cancer of the Uterus.
Dr. R. N. Simpson, Winnipeg.

SECTION OF PATHOLOGY AND BACTERIOLOGY

Thursday, June 16th

10.00 a.m.

PATHOLOGICAL LABORATORIES—275 UNIVERSITY AVENUE

The section of Pathology will hold its meeting this morning from 10 a.m. to 1 p.m., in the Pathological Laboratories of the University of Toronto, 275 University Avenue, South-west corner of Toronto General Hospital grounds.

Half-hour talks with demonstrations of pathological material will be given on the clinical subjects outlined below. These presentations will be made as practical and as interesting as possible, and their application to the problems of the general practitioner emphasized.

Each demonstration will be given twice in the morning, at the times specified. Members will have to choose the demonstrations preferred, as it will be impossible to attend them all.

At 10 a.m. and again at 11.30 a.m.

HAY FEVER—Dr. H. K. Detweiler.
"A brief discussion on etiology, methods of laboratory diagnosis and treatment."
Room No. 45

LEUKÆMIA—Drs. G. W. Lougheed and E. S. Jeffrey.
"A brief talk on the subject of leukæmia, with the presentation of a series of blood smears from interesting cases."
Room No. 29

DIABETES—Dr. Noble Sharp.

"A clinico-pathological discussion with a laboratory demonstration of methods for estimating the sugar content of blood and urine."

Room No. 29

TUBERCULOSIS—Dr. I. H. Erb.

"A discussion of the pathology of tuberculosis in children with the presentation of some interesting pathological material."

Room No. 19

ENDOMETRIOSIS—Dr. J. W. Shirer.

"A discussion of dysmenorrhea, and its relation to the implants of endometrial tissue in the pelvic cavity."

Room No. 29

OTO-LARYNGOLOGICAL ABNORMALITIES—Dr. D. E. S. Wishart (10 a.m. only).

"A very interesting series of specimens will be shown illustrating various pathological conditions of the ear, nose and throat."

Room No. 10

At 10.30 and again at 12 a.m.

VOMITING OF PREGNANCY—Prof. V. J. Harding.

"Some factors in its causation: A demonstration of the laboratory control of treatment."

Room No. 19

INFECTIOUS JAUNDICE—Dr. Gordon Cameron.

"A résumé of the clinical features of this disease with a demonstration of its relation to endemic leptospira infection in rats."

Room No. 38

LEAD POISONING—Dr. George Laughlen.

"A brief discussion on the symptomatology and treatment with a demonstration of blood smears from typical cases."

Room No. 29

BOVINE TUBERCULOSIS—Dr. R. M. P. Price.

"A discussion of the bovine types of infection in animals and their relationship to human infection with a demonstration of experimental production of bovine tuberculosis in animals."

Room No. 33

EXPERIMENTAL TUMOUR PRODUCTION—Drs. W. B. Brebner and A. W. M. White.

"An outline of some recent work on the etiology of cancer with a demonstration of the experimental production of tumour growth in animals."

Room No. 32

At 11 a.m. and again at 12.30 a.m.

JAUNDICE—Dr. Wm. Magner.

"A discussion of the significance of jaundice with a demonstration of laboratory methods employed in its investigation."

Room No. 19

FOCAL INFECTIONS—Prof. W. L. Holman.

"What is meant by focal infection, its significance and importance in general practice and a demonstration of the bacteriology with resultant lesions in human cases."

Room No. 38

METABOLISM—Dr. W. R. Campbell.

"A brief outline as to what is meant by basal metabolic rate and the significance of a rise or lowering of this rate: The principles underlying the estimation of the basal metabolic rate will be given."

Room No. 41

FRACTURES—Dr. J. E. Bates.

"A very interesting series of slides will be shown illustrating the successive changes occurring in the healing of a fracture."

Room No. 29

TUMOURS OF THE EYE—Dr. Alexander MacDonald

"Diagnosis and treatment of tumours of the eye with a demonstration of various interesting types of tumours found in the orbit."

Room No. 10

INTRATRACHEAL INJECTION OF LIPIODOL—Dr. A. H. W. Caulfeild.

"A demonstration of the intratracheal injection of lipiodol by the supraglottic method, with a discussion of its diagnostic and therapeutic value."

The Pathological Museum in this building will be open each day, from 9 a.m. to 5 p.m., to visiting physicians.

The pathological laboratories will also be open for inspection of routine work in pathology, bacteriology, serology, and chemistry.

SECTION OF PÆDIATRICS

Theatre Clinic—Hospital for Sick Children

By Members of the Staff

Wednesday, June 15th

9.00 a.m.—Treatment of eczema in infants.
Dr. G. E. Smith.

Quartz light therapy in pædiatrics—Treatment of rickets.
Dr. F. F. Tisdall.

Intravenous and interstitial therapy.
Dr. A. P. Hart.

Management of heart disease.
Dr. G. R. Pirie.

Management of diabetes.
Dr. Gladys Boyd.

Management of nephritis.
Dr. Gladys Boyd.

Management of marasmus or atrophy.
Dr. Alan Canfield.

Management of prematurity.
Dr. R. Simpson.

Management of malnutrition in older children.
Dr. G. A. Davis.

Treatment and prognosis of scarlet fever and diphtheria in private practice.
Dr. B. Hannah.

Diagnosis, prognosis and treatment of acute poliomyelitis.
Dr. G. Boyer.

Goitre.
Dr. M. A. Cox.

A general synopsis of each case or condition presented will be given to each member attending the clinic along with a brief résumé of the chief recent advances in each instance.

Thursday, June 16th

Place of Meeting—Room 6, University College.

9.00 a.m.—Diagnosis and treatment of enlarged thymus.
Dr. Howard Spohn, Vancouver.

Management of acute respiratory infections other than pneumonias.
Dr. Douglas Leitch, Edmonton.

Feeding problems in private practice.
Dr. Alton Goldbloom, Montreal.

Treatment of whooping cough.
Dr. R. R. Struthers, Montreal.

Acidosis and ketosis in children, practical consideration of.
Dr. Graham Ross, Montreal.

Results of the newer method of scarlet fever therapy.
Dr. H. B. Cushing, Montreal.

Intestinal grippe (so-called).
Dr. F. H. Boone, Hamilton.

Weaning problems.
Dr. Oswald Day, Winnipeg.

SECTION OF PUBLIC HEALTH

Place of Meeting—Room 11, University College.

Tuesday, June 14th

2.15–4.30 p.m.—Public Health Nurses' Section, Canadian Public Health Association.
Room 11, University College.

8.30 p.m.—Annual Meeting, Canadian Public Health Association.
Physics Building, University of Toronto.

Wednesday, June 15th

9.00 a.m.–12 noon—Public Health Nurses' Section, Canadian Public Health Association.
Room 11, University College.

Thursday, June 16th

9.00 a.m.—Types of clinical reactions following the injection of biological products.
Dr. A. H. W. Caulfeild, Toronto.

Some aspects of physiological hygiene.
Dr. C. H. Best, Toronto.

Newer developments in the control of narcotic drugs.
Dr. J. A. Amyot, Ottawa.

Immunization against diphtheria.
Dr. F. Adams, Windsor.

The medical and legal aspects of drug addiction.
Dr. A. R. Richards, Burwash.

Periodic health examinations.
Dr. A. Grant Fleming, Montreal.

SECTION OF RADIOLOGY

Place of Meeting—Room 5, University College.

Thursday, June 16th

9.00 a.m.—Duodenal diverticula.
Dr. W. J. Cryderman, Toronto.

Radiological diagnosis of appendiceal disease.
Dr. W. H. McGuffin, Calgary.

Technique and results of cholecystography by the intravenous method—report of 160 cases operated upon.
Dr. James T. Case, Battle Creek, Mich.

The relation of sinus infections to respiratory diseases.
Dr. R. W. Knight, Brantford.

X-Ray diagnosis in anencephalus.
Dr. B. R. Mooney, Edmonton.

Roentgen-ray studies of dust inhalation.
Dr. C. R. Brink, Toronto

A case of recurrent sarcoma.
Dr. W. A. Wilkins, Montreal.

12.30–1.00 p.m.—Discussion.

Friday, June 17th

9.00 a.m.—Paper—title to be announced later.
Dr. R. Proctor, Edmonton.

The newer methods of treating asthma.
Dr. S. Gilbert Scott, London, Eng.

The treatment of rodent ulcer—Analysis of cases treated from 1906 to 1926.
Dr. A. Howard Pirie, Montreal.

Investigations and conclusions in physical therapy.
Dr. L. K. Poyntz, Chicago.

Investigation of chest diseases by means of lipiodol.
Dr. L. R. Hess, Hamilton.

Some unusual diseases of the colon.
Dr. W. H. Dickson, Toronto.

Researches regarding the interpretation of the lesions in pulmonary tuberculosis as seen in x-ray films.
Dr. P. M. Andrus, London, Ont.

12.30–1.00 p.m.—Discussion.

Note:—Illuminating boxes will be provided for exhibiting films, and members are urged to bring interesting films for the general exhibit.

SECTION OF SURGERY

Place of Meeting—Room 8, University College.

Wednesday, June 15th

9.00 a.m.—Operations in all Toronto hospitals. (See Bulletin Boards).

Thursday, June 16th

9.00 a.m.—Obstructive lesions of the gastro-intestinal tract.
Dr. A. J. Grant, London, Ont.

Splenomegaly with report of two cases.
Dr. G. A. B. Addy, St. John.

Foot-ball injuries to the knee joint.
Dr. L. J. Austin, Kingston, and Dr. D. M. Campbell, Kingston.

Mechanical factors in infection of the renal pelvis and tubules.
Dr. D. W. MacKenzie, Montreal.

Some aspects of the problem of joint tuberculosis.
Dr. Russell A. Hibbs, New York.

Carcinoma of the colon—with case reports.
Dr. J. W. Thomson, Vancouver.

Friday, June 7th

9.00 a.m.—Mobility of the large bowel and its influence on health.
Dr. Andrew Croll, Saskatoon.

Post-operative ileus.
Dr. John A. Gunn, Winnipeg.

Thyroid.
Dr. E. M. Eberts, Montreal.

Disabilities of the shoulder region.
Dr. Alex. Gibson, Winnipeg.

Immediate and end results of supra-pubic prostatectomy — Technique and pre- and post-operative care.
Dr. Verne C. Hunt, Rochester, Minn.

Papilloma of the intestines.
Dr. J. G. MacDougall, Halifax.

Saturday, June 18th

9.00 a.m.—Clinics and demonstrations in general surgery, orthopaedics and genito-urinary surgery, at the following hospitals:

St. Michael's Hospital.

Toronto General Hospital.

Hospital for Sick Children.

Toronto Western Hospital, (by the combined staffs of Grace and Western.)

These clinics and demonstrations will be in charge of the staff of the respective hospitals. It is proposed to invite one or two visiting surgeons to be present at each of the hospitals to take part in the demonstrations and discussions.

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IMPORTANT NOTICE TO ALL GOLFERS

CANADIAN MEDICAL ASSOCIATION CHALLENGE CUP

It is with pleasure that we announce a most interesting innovation at the annual meetings of the Canadian Medical Association. A golf tournament will be held on Tuesday, June 14th, play to take place throughout the entire day, over one of Toronto's interesting courses. A beautiful cup to be known as The Ontario Cup, has been graciously donated by the Ontario Medical Association. Other excellent prizes will be presented.

In order that the Committee in charge may make complete arrangements for the tournament, it is most important that all members of the Canadian Medical Association who desire to take part will communicate with the Chairman of the Committee, Dr. Dennis Jordan, 184 College Street, Toronto, not later than May 25th, 1927.

The Committee desires the following particulars:—

Name.....

Address.....

Name of Golf Club.....

Handicap.....

Complete details as to course, partner, time, etc., etc., will be supplied all players prior to the date of the tournament. If you intend to play, please communicate with the Golfing Committee at once.

Members will have the privilege of playing during the week at several of the Toronto Golf courses. Enquire at Information Office, University College.

TRANSPORTATION

Owing to the fact that a great many members of the Association will motor to the annual meeting, and also owing to the fact that those from a distance, by the use of summer tourist tickets, can get a much better rate than would be available if ordinary convention rates were used, it has been deemed advisable not to issue travelling certificates this year.

HOUSING

The Committee on Housing have made arrangements for two types of accommodation for guests attending the Fifty-Eighth Annual Meeting. The University of Toronto with its affiliated colleges has placed its residence accommodation at the disposal of the Association. In addition to this, limited hotel accommodation will be available. With reference to this latter type, the leading hotels are unable to promise to reserve single rooms during this session. Therefore, the hotel reservations must be for double rooms in the majority of instances.

The University residences which will be at our disposal will be the "Men's Residences" on Hoskin Avenue, the Residence, 73 St. George Street, and if needed, Trinity House and Burwash Hall. These will afford ample accommodation and will satisfy the requirements for single rooms.

Lady physicians and physicians accompanied by their wives, may be accommodated in the residence of St. Hilda's College, St. George Street.

The Warden of Hart House has consented to have breakfast served to the guests at a reasonable charge during the session. The charges for accommodation are shown in the following list:

UNIVERSITY OF TORONTO RESIDENCES:

1 to 4 days	$5.00
Each additional day	$1.00

KING EDWARD HOTEL:

*Single Room	$4.00
Double Room with Bath	7.00

PRINCE GEORGE HOTEL:

Double Room with running water	$3.00
Room with Bath	$4.00 to $6.00

WAVERLEY HOTEL:

*Single Room with running water	$2.00 to $2.50
*Single Room with Bath	$2.50 to $4.00
Double Room with running water	$3.50 to $4.00
Double Room with Bath	$4.00 to $7.00

QUEEN'S HOTEL:

*Single Room	$2.00 to $3.00
Double Room	$4.00 to $5.00
*Single Room with Bath	$3.00 to $4.50
Double Room with Bath	$5.50 to $7.00

*A very limited number of single rooms will be available.

It is requested that prospective guests make known their requirements by writing **not later than May 25th,** to Dr. Gordon S. Foulds, Secretary of the Housing Committee of the Association, at its offices, 184 College Street, Toronto 2, Ontario, **stating the type of accommodation desired and the number of days for which accommodation will be required.** The desirability of accommodation in the University Residences is obvious on account of the proximity of these buildings to the meeting places of the Association on the University Campus and the sociability found in this type of arrangement.

LADIES' PROGRAMME

Executive Committee

General Convener - Mrs. F. N. G. Starr
Honorary Secretary - Mrs. F. C. Trebilcock
Honorary Treasurer - Mrs. W. B. Hendry

Mrs. A. Primrose, Convener of Registration and Reception.

Mrs. C. H. Hair, Convener of Dinner.

Mrs. D. E. Robertson, Convener of Transportation.

Mrs. W. E. Gallie, Convener of Sports.

Mrs. W. B. Hendry, Convener of Thursday Evening Entertainment.

Mrs. Edgar Brandon, Representative of the Ontario Medical Association.

Mrs. A. J. MacKenzie, Representative of Academy of Medicine.

Dr. Florence McConney, Representative of Medical Alumnæ.

Mrs. J. G. Fitzgerald, Mrs. T. C. Routley, Mrs. George S. Young, Mrs. Gordon Bates.

Tuesday, June 14th

1.00 p.m.—Luncheon at the Granite Club for the wives of the visiting members of the Canadian Medical Association Council, and the wives of the visiting members of the Directorate of the Ontario Medical Association, guests of Mrs. F. N. G. Starr.

3.30 p.m.—Through the courtesy of Mr. A. E. Mathews, visiting ladies will be entertained on his yacht, "The Condor," to a trip on Lake Ontario.

8.30 p.m.—Musicale at "Wymilwood," 84 Queen's Park, for the visiting ladies, guests of Mrs. A. Primrose.

Wednesday, June 15th

4.30–6.00 p.m.—Entire Convention to be the guests at a Garden Party, of His Honour, the Lieutenant-Governor of Ontario, and Mrs. William Donald Ross, at Government House, Chorley Park.

7.45 p.m.—Annual Dinner and Dance—Hart House — reservations for which must be completed by 6.00 p.m. on Tuesday.

Thursday, June 16th

2.45 p.m.—Drive around the city for visiting ladies, leaving from University College, concluding with a

4.30 p.m.—Garden party at "Donalda Farm"—the entire Convention to be guests of Mrs. D. A. Dunlap. Motors will leave from University College.

8.00 p.m.—Informal reception at the Royal Canadian Yacht Club, for the visiting ladies who will be the guests of the Canadian Medical Association.

Friday, June 17th

10.30 a.m.—Golf tournament at Lambton Golf Club, followed by luncheon for the visiting players, guests of the Sports Committee.

4.00 p.m.—Drive to University Farm, transportation and afternoon tea, for the entire Convention, guests of Connaught Laboratories.

8.30 p.m.—Second Listerian Oration, delivered by Sir Charles Scott Sherrington, G.B.E., M.D., D.Sc., F.R.C.P., LL.D, Oxford, England.

There will be a one-day Golf Tournament for visiting ladies at the Lambton Golf Club, on Friday, June 17th, at 10:30 a.m. Contestants will meet the Golf Committee at the University Buildings at 10:00 a.m., and will be motored to the Club. There will be medal rounds on the long and short courses, with prizes for the best net and best gros on each course. The visiting ladies taking part in these events, are invited to lunch with the Golf Committee.

Arrangements for swimming, tennis, badminton or golf can be made any other morning, by notifying the Registration Committee at the University Buildings.

Shopping tours, visits to the Royal Ontario Museum, the I.O.D.E. Preventorium, the Art Gallery, etc., form part of the busy and interesting hours which await our visiting ladies. Professor Currelly of the Royal Ontario Museum and Mr. Greig, Curator of the Art Gallery, will be glad to have visitors to the Convention, either men or women, inspect these buildings at any time during their stay in Toronto, the convention badge entitling all guests to admission.

It is urgently requested that all visitors to the Convention (men and women) register immediately upon their arrival in Toronto, at the Exhibition Hall, University College, University of Toronto. Members of the Ladies' Registration Committee will be present in the Registration Room to distribute convention badges to the wives of all members of the Convention at the time of registration, to give information about the convention programme and make reservations for the dinner. As the tickets for the dinner will be limited to 600, it is very necessary that those desiring to attend this function make their reservations early.

It is desirable that members and their wives indicate to the Registration Committee, as early as possible, the social functions which they will be able to attend,—admission to these functions to be by the Convention Badge.

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COMMITTEE IN CHARGE OF THE ANNUAL MEETING CANADIAN MEDICAL ASSOCIATION

CHAIRMAN - - - - - - - - - - DR. F. N. G. STARR
SECRETARY - - - - - - - - - - DR. T. C. ROUTLEY

SECTIONS

ANÆSTHETISTS
Chairman—Dr. Samuel Johnston
Secretary—Dr. W. J. Defries

EYE, EAR, NOSE AND THROAT
Chairman—Dr. W. H. Lowry
Secretary—Dr. D. E. S. Wishart

MEDICINE
Chairman—Dr. George S. Young
Secretary—Dr. G. H. Agnew

OBSTETRICS AND GYNÆCOLOGY
Chairman—Dr. H. B. VanWyck
Secretary—Dr. S. J. N. Magwood

PATHOLOGY AND BACTERIOLOGY
Chairman—Dr. Wm. Magner
Secretary—Dr. W. L. Robinson

PÆDIATRICS
Chairman—Dr. Alan Brown
Secretary—Dr. E. A. Morgan

PUBLIC HEALTH
Chairman—Dr. George D. Porter
Secretary—Dr. J. T. Phair

RADIOLOGY AND PHYSIOTHERAPY
Chairman—Dr. G. E. Richards
Secretary—Dr. A. H. Rolph

SURGERY
Chairman—Dr. Charles H. Gilmour
Secretary—Dr. T. A. J. Duff

REPRESENTING THE ACADEMY OF MEDICINE
President—Dr. A. J. Mackenzie
Secretary—Dr. R. S. Pentecost

SUB-COMMITTEES

Reception, Convener—Dr. J. H. McConnell
Entertainment, Convener—Dr. F. C. Trebilcock.
Housing, Convener—Dr. M. H. V. Cameron.
Housing, Secretary—Dr. Gordon Foulds.
Dinners, Convener—Dr. D. E. Robertson.
Exhibits, Convener—Dr. R. I. Harris
Golf, Convener—Dr. Dennis Jordan.
Transportation, Convener—Dr. Roy Thomas.
Publicity, Convener—Dr. Roscoe Graham.
Badges, Convener—Dr. F. C. Harrison.
Information, Convener—Dr. J. C. Maynard.

UNAUTHORIZED INSURANCE COMPANIES

To the Editor:

In view of the fact that a number of our members have made inquiries regarding the Union Mutual Casualty Company which was stating that it was authorized to do business in Canada, the Department of Insurance at Ottawa, when requested by us to do so, has issued a statement, as per copy herewith enclosed. I think it would be well to publish this in the *Journal*.

Yours faithfully,
T. C. ROUTLEY,
General Secretary.

184 College St.,
Toronto, April 20, 1927.

April 12, 1927.

DEPARTMENT OF INSURANCE, OTTAWA

It has been brought to the attention of the Department that certain companies and societies located in the United States have been circulating by mail, or otherwise in Canada, literature designed to bring applications for insurance from Canadian correspondents to the head offices of the companies.

In some cases the circulars even contain statements to the effect that the companies are fully authorized to write insurance by mail in the United States and Canada. As such a statement conveys the impression that the companies have obtained some form of authority from the Dominion authorities permitting them to solicit insurance by mail, the Department considers it in the public interest to state that no such authority has been granted to any company not regularly licensed under the insurance laws of the Dominion.

The companies in question have no legal status in Canada. They maintain no assets in Canada for the protection of Canadian policyholders, and have provided no facilities for action being taken against the companies in Canadian Courts. All foreign insurance companies legally authorized to transact insurance in Canada are regularly licensed by the Department and the public should be warned against interpreting statements such as those referred to in the foregoing as indicating any official or unofficial recognition by the Department.

Among the companies whose activities have recently come to the attention of the Department are the following:

Catholic Mutual Relief Society, Omaha, Nebraska.
Ministers Protective Society, Meadville, Penn.
Union Mutual Casualty Company, Des Moines, Iowa.
Union Mutual Life Company of Iowa, Des Moines, Iowa.

(Signed) G. D. FINLAYSON,
Superintendent of Insurance.

CONFERENCE ON THE MEDICAL SERVICES IN CANADA

The second conference on the Medical Services in Canada, arranged by the Canadian Medical Association and held under the patronage of the Honourable J. H. King, M.D., M.P., Minister of Health for Canada, took place in the House of Commons, Ottawa, on March 28th, 29th, and 30th, 1927. Meeting under the chairmanship of Dr. A. Primrose, and with an attendance of delegates from all parts of the Dominion, it was evident from the outset that the conference was going to be a success.

The first session was occupied by cordial addresses of welcome from the Honourable Dr. King, Minister of Health, Dr. F. N. G. Starr, President-Elect of the Canadian Medical Association, and most interesting and instructive addresses from the Chairman, Dr. Primrose and Dr. John Amyot, Deputy Minister of Health for Canada.

The interest of the delegates was maintained during the afternoon of Monday, by a most illuminating discussion on the subject of Medical Licensure. The subject was introduced by Dr. H. H. Murphy of Kamloops, and the discussion opened by Drs. A. MacG. Young of Saskatoon, James MacCallum of Toronto and J. C. Meakins of Montreal, who were followed by many other delegates. Dr. E. Stanley Ryerson, Secretary of the Medical Faculty of the University of Toronto suggested that much of the difficulty in regard to licensure in Canada could be gotten over if the medical schools would enter into an arrangement with the Dominion and Provincial Medical Councils, whereby one examination would qualify candidates for degree and license. The conference instructed that this suggestion be carefully considered and studied during the coming year.

On Tuesday morning, Dr. Alphonse Lessard of Quebec opened the programme with a splendid paper on "County health service in the Province of Quebec," which indicated to the conference that most praiseworthy efforts were being put forth in the Province of Quebec in the matters of medical and health service.

Dr. G. Stewart Cameron of Peterborough followed with an excellent paper on the Nursing Problem, particularly emphasizing the need of closer co-operation between the medical and nursing professions in matters of mutual interest. Dr. Cameron's paper was discussed by Miss Shaw, Miss Gunn and Miss Smellie, all of whom clearly demonstrated the need for more intimate study of our joint problems.

The next paper entitled, "What we should spend on public health in Canada," was delivered by Dr. J. W. S. McCullough of Toronto, stressing the importance of health in our national life. Dr. McCullough adduced plenty of evidence to prove that the health of the people is deserving of the very best of financial support.

The subject of Periodic Physical Examinations of those who are apparently well, was presented by Dr. G. A. Ramsay of London. Dr. Ramsay stressed the importance for physical stock-taking of the individual at regular intervals. This was followed by an address on "Popular health education of the general public by the medical profession," presented by Dr. Grant Fleming of Montreal. Drs. Ramsay and Fleming made it very clear to the conference that health education, health habits and health stock-taking are matters in which the public is vitally interested, but for which the public must look to the medical profession for leadership.

Under-graduate Medical Education was the topic for Tuesday afternoon, the programme being divided into four sections and presented as follows: The Product of the Medical School, by Dr. J. C. Meakins, Montreal; The Curriculum of Study, by Dr. James Miller, Kingston; The Organization of a New Medical School, by Dr. H. M. Tory, Edmonton; Cor-relation of Laboratory and Clinical Instruction in a Medical Curriculum, by Dr. S. W. Prowse, Winnipeg.

All four papers were highly instructive and interesting. The discussion was opened by Dr. W. H. Hattie of Halifax who was followed by many other delegates. The session provided every opportunity for an exchange of ideas by representatives of all of the medical schools of Canada. One outstanding suggestion was that there should be an interchange of teachers from time to time.

Wednesday morning proved to be another interesting session when the following subjects were presented: Medical Legislation, by Dr. Robert T. Noble, Toronto; A Report of Extra-Mural Post-Graduate Medical Education Conducted by the Canadian Medical Association, by Dr. George S. Young, Toronto; Occupational Therapy, by Dr. Goldwin Howland, Toronto; Medical Treatment of Indigents, by Dr. H. W. Wadge, Winnipeg.

All four papers offered presented subjects of vital interest not only to the medical profession of Canada, but to the citizens as a whole.

The final session on Wednesday afternoon saw interest maintained at a high level when the following programme was presented: A Report of the Maternal Mortality Survey of Canada, by Dr. Helen MacMurchy, Ottawa; Some Medical Aspects of Immigration, by Dr. H. W. Wadge, Winnipeg; The Provision of Hospital Facilities in Rural Districts, by Dr. M. M. Seymour, Regina.

One of the most delightful sessions of the whole conference was the dinner held at the Chateau Laurier on Tuesday evening. The more

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serious side of the conference was here laid aside, allowing time for expressions of hearty good will and friendship.

As the *Journal* will later present certain of the conference papers and resolutions, no attempt has been made in this report to do other than briefly refer to what took place. Those in charge of the meeting, as well as close upon 100 delegates who attended, are fully convinced that the conference idea should be perpetuated. Resolutions to that effect were unanimously adopted. One of the outstanding features of these meetings has been the fact that the conference was sponsored by the Minister of Health for Canada, and took place in the House of Commons, Ottawa. This is a striking tribute to the close and friendly relationship which exists in our country between those in authority and organized medicine.

MARITIME CONFERENCE

A Maritime Medical Conference, arranged by the Canadian Medical Association, was held in Moncton, N.B., on March 24th and 25th, 1927. Particular interest attaches to the meeting inasmuch as it was the first time in the history of the three provinces by the sea, that such a conference had been held. The following delegates were in attendance:—

Dr. A. F. Miller,	–	Kentville, N.S.
Dr. J. A. McPhee,	–	Summerside, P.E.I.
Dr. J. R. Nugent,	–	Saint John, N.B.
Dr. R. J. Collins,	–	Riverglade, N.B.
Dr. P. S. Campbell,	–	Halifax, N.S.
Dr. A. C. Jost,	–	Halifax, N.S.
Dr. J. J. Roy,	–	Sydney, N.S.
Dr. C. J. Veniot,	–	Bathurst, N.B.
Dr. S. L. Walker,	–	Halifax, N.S.
Dr. L. M. Curren,	–	Saint John, N.B.
Dr. G. J. Wherritt,	–	Moncton, N.B.
Dr. J. B. McKenzie,	–	Loggieville, N.B.
Dr. C. L. Goss,	–	Sackville, N.B.
Dr. W. P. Kirby,	–	Moncton, N.B.
Dr. R. Morse,	–	Lawrenctown, N.S.
Dr. S. R. Jenkins,	–	Charlottetown, P.E.I.
Dr. I. J. Yeo,	–	Charlottetown, P.E.I.
Dr. R. E. Wodehouse,	–	Ottawa, Ont.
Dr. F. N. G. Starr,	–	Toronto, Ont.
Dr. A. Primrose,	–	Toronto, Ont.
Dr. T. C. Routley,	–	Toronto, Ont.

The first session convened on the afternoon of March 24th, was called to order by Dr. T. C. Routley, General Secretary of the Canadian Medical Association, who stated that the purpose of the meeting might be summed up as an opportunity for the profession in the three provinces to discuss plans whereby they might be of mutual assistance, not only to each other, but to the profession in Canada as a whole. Dr. Routley then asked the meeting to elect a Chairman and a Secretary. On motion duly carried, Dr. L. M. Curren of Saint John was elected Chairman and Dr. I. J. Yeo of Charlottetown was elected Secretary.

Among the subjects included on the agenda, the following were discussed:—

Extra-Mural Post-Graduate Plans

The delegates present spoke most enthusiastically of the post-graduate tours which had been made of their respective provinces during the past year, as part of the all-Canadian plan put into effect by the Canadian Medical Association and so generously financed by the Sun Life Assurance Company. The delegates expressed the wish that similar tours be conducted this summer, and some little time was spent in arranging dates and choosing speakers and subjects.

Provincial Inter-Change of Speakers

Particular attention was directed to the advisability of the respective provinces interchanging speakers in connection with the extramural plan. It was agreed that a list of available men from each province should be made known to the other provinces.

Provincial Annual Meeting Dates

Considerable discussion took place regarding the advisability of the three provinces holding their annual meetings in sequence, in order that visiting speakers might, where desired, be utilized at all three meetings. It was pointed out to the meeting that this plan had been adopted by the Western Provinces and was working out very satisfactorily. It was finally agreed that the annual meeting dates for this year would be arranged in sequence, as follows:—

Nova Scotia, at Sydney, July 6, 7.

New Brunswick, at Chatham, July 12, 13.

Prince Edward Island, at Charlottetown, July 13, 14.

In addition to the splendid provincial programme which is being prepared in each instance, a group of outside speakers were nominated to visit the three centres on the dates indicated.

Canadian Medical Association Annual Meetings

In order that there might be evidenced the closest co-operation between the three provinces in regard to the visit to the Maritimes from time to time by the Canadian Medical Association, a good deal of discussion took place on this point. Invitations from Saint John and Charlottetown having been extended to the C.M.A. to meet in the East in 1928, it was suggested that a decision be arrived at by the delegates as to which invitation should be pressed. It was finally moved, seconded and unanimously carried that the invitation to the C.M.A. to meet in Charlottetown, P.E.I., in 1928, should be heartily

supported by the Maritime Provinces. It was further agreed by the delegates that the next C.M.A. meeting to be held in the East should go to Saint John.

Other topics which engaged the attention of the meeting were as follows: Medical Organization; the best plan to complete both local and provincial medical organizations; Periodic Health Examinations; Workmen's Compensation Board Problems; Medical Legislation; the Narcotic Drug Problem, and other matters of general interest to the profession.

The Civic Banquet

One of the most interesting and outstanding features of the Conference was the civic banquet given to the delegates on Thursday evening, sponsored by the Lions Club of Moncton. There were about 150 present, and addresses which were broadcast through the courtesy of the Canadian National Railways, were given by the following:—

Mayor Budd A. Taylor, Moncton; Dr. F. N. G. Starr, Toronto, President-Elect of the Canadian Medical Association; Dr. A. Primrose, Toronto, Chairman of Council of the Canadian Medical Association; Dr. T. C. Routley, Toronto, General Secretary, Canadian Medical Association; Dr. R. E. Wodehouse, Ottawa, Secretary, Canadian Tuberculosis Association; Mr. Parker, Toronto, Representing the Life Insurance Companies.

Before the meeting adjourned, the delegates, by resolution, unanimously approved of the idea of a similar conference being held from time to time. A vote of thanks was tendered to Dr. F. N. G. Starr, President-Elect of the C.M.A., Dr. A. Primrose, Chairman of Council, and Dr. T. C. Routley, General Secretary for attending the meeting.

I. J. YEO, *Secretary.*

Correspondence

THE EMPLOYMENT OF THE TUBERCULOUS

Saint John County Hospital
(for Tuberculosis)

To the Editor,

The problem of providing treatment for the tuberculous is, in my opinion, far from settled. I have not been impressed with the results that I have seen following occupational therapy or vocational training in institutions for the tuberculous. To carry out a system of re-education of the tuberculous patient and the establishing of him in some new position, is a big problem; in my opinion, we have a large enough problem at present in providing treatment for tuberculous patients.

My experience has been that most patients do not break down from over-work. They break down from lack of proper care when they are not working. If patients have developed the proper viewpoint and have recovered sufficiently to go to work, I believe, under present conditions, the best thing is to let them return to their former occupations. There will be an occasional patient for whom special supervision and special provision should be made, but it would be much cheaper and better, in my opinion, to provide for these individual cases as they arise.

Yours truly,
H. A. FARRIS, M.D.

Saint John, N.B.
February 21, 1927.

Calydor Sanatorium, Gravenhurst, Ont.

To the Editor,

In 1920 and 1921 the care and employment of the tuberculous ex-service man after discharge from the sanatorium was given much consideration. A board, consisting of Dr. J. R. Byers, Ste. Agathe, Quebec, Dr. A. F. Miller, Kentville, N.S., Dr. D. A. Stewart, Ninette, Manitoba, Lieut.-Colonel Wm. H. Hart and myself, was sent out by the Department of Soldiers' Civil Re-establishment to consider this subject with ex-service men themselves in the several sanatoria throughout Canada then treating ex-service men, and with others. A report, mainly the work of the late Lieut.-Colonel W. M. Hart, was published.

The pros and cons of employment were very fully considered and the comprehensive information then existing were digested and included in this report. It was found that in practically all the sanatoria some form of occupation was undertaken by patients who were suitable to undergo training and work. The cost was met largely by the Department. My recollection is that there was difficulty in adjusting cost of material to the patient, and the compensation due to him for work done. From a standpoint of morale this outlet for energy was excellent. Certain industrial shops in Hamilton, Toronto, Vancouver and elsewhere were also established. From the economic standpoint, however, there were great difficulties, since in the operation of these shops there arose the question of a heavy overhead, and with the men difficulties in regard to an adjustment of earnings with a continuation of the pensions. Notably at Hamilton a fairly elaborate scheme was devised by a group of ex-service men for the establishment of a community where disabled men could live and work. When presented to the parliamentary committees I believe this scheme was considered impracticable financially.

With the withdrawal of Government aid to

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sanatoria in providing vocational training in a limited form, there occurred inevitably a great reduction in the scope of such industrial plants as may still be carried on. I believe, however, that where the method was well established facilities are still provided to some extent.

The expense of such an effort is one that cannot be lightly incurred by institutions that have difficulty in meeting the necessary costs for the maintenance and care of patients on ordinary lines; while the considerable effort now demanded of the always limited executive and medical staffs of sanatoria to maintain a high standard of medical work in the institutions and to give an extramural service to outpatient clinics, fully taxes these organizations.

The sanatoria or their neighbourhood are the logical points at which to develop such industrial effort. Successful colonies have been established at certain points in England and in the United States, but I think they are financed separately from the sanatoria. I was early impressed with the need of developing some industry in the early days of the Muskoka Free Hospital for Consumptives, and a quite successful chicken plant was ultimately established there which gave for years employment to a number of patients and prolonged their residence in Muskoka. It was carried on for some years, but was ultimately discontinued owing to difficulties in changing management of plant and its consequent failure.

If a scheme of employment in the neighbourhood of sanatoria could be developed for civilians, with the opportunity afforded therein for pensioners in the status of civilians, I believe that it could be made reasonably successful, but it would certainly have to be subsidized, and a considerable initial capital expenditure would be necessary. Provision would have to be made for the residence of men and their families, which would be a great additional expense. The concentration of tuberculous men and women and their families at points at which such ventures might be established, is not to be lightly regarded, since very often, owing to existing laws, such individuals and their dependents become charges upon the community where they are resident. Sanatorium physicians would no doubt gladly welcome such a development and would lend all possible aid, but they would be reluctant to assume the responsibility of initiating such colonies and in being responsible for their support. In Canada the widely scattered and small population makes the development of such schemes somewhat more difficult than in the more concentrated populations of England and the eastern United States.

The Canadian Red Cross Society with all its prestige has had considerable difficulty in managing workshops for soldiers at Vancouver, Winnipeg and Montreal. The Canadian Tuberculosis Association has made an appeal on more than one occasion for the development of such schemes, but this Association, with very limited support for its executive office, and the publication of helpful literature for the anti-tuberculosis campaign, could not do more than be helpful to efforts undertaken by some private or public organization. There is no doubt that the need exists for a comprehensive scheme and the first step towards its realization would be the arousing of widespread interest, which could best be initiated by the *Canadian Medical Association Journal.*

Yours very truly,

C. D. PARFITT.

March 19, 1927.

Tranquille Sanatorium, Kamloops, B.C.

To the Editor,

I think that every man engaged in Sanatorium work realizes the necessity for some form of employment for the tuberculous, and no doubt has given the matter a great deal of thought. I think that some such scheme would have been undertaken in this country before, except that everyone is afraid of the expenditure which would necessarily be involved. I do not feel that much progress will ever be made by merely extending occupational therapy, as carried on in the various sanatoriums. Such industries as those carried on at Papworth, England, where articles which find a ready market are manufactured, would seem to be the most suitable.

We try to employ ex-patients on the staff of the sanatorium where possible, but find that even here, it is difficult to provide suitable full-time employment. Several men have given the subject a great deal of special study, and the National Tuberculosis Association at 370-7th Ave., New York, has a good deal of literature on it.

In 1920, the S.C.R. Board of Consultants, consisting of Drs. Parfitt, Hart, Byers, Stewart, and Miller, presented a pamphlet entitled "The Care and Employment of Tuberculous Ex-Service Men After Discharge." This can be obtained from the Department of S.C.R. In the *Journal of Outdoor Life*, September, 1926, there is a very good article by Bronfin, entitled "Problem of Post Sanatorium Care of the Tuberculous." In the *British Journal of Tuberculosis*, of January, 1926, and January, 1927, Dr. Varier-Jones has two very good articles on the Papworth scheme, which he says is a decided success.

I think the time is not far distant when something will have to be done in this regard in Canada, and I look upon it as one of the most important phases of the tuberculous problem, as it affects us to-day.

Yours very truly,

A. D. LAPP.

March 2, 1927.

The Massachusetts-Halifax Health Commission, Halifax, N.S.

To the Editor,

The problem of the employment of the tuberculous is probably the most difficult one presenting

itself to the tuberculosis worker. An editorial in the *British Medical Journal* discusses the recent findings of the Committee of the Joint Tuberculosis Council of England on this subject. Your abstract deals briefly with this subject, but offers ideas and suggestions towards the solution of this problem with which I am in accord. To-day, it is comparatively simple to arrange for institutional or sanatorium treatment for the working man. His response to treatment depends very largely upon the extent of disease present on his admission to the institution. The chief cause of relapse after sufficient treatment has been taken, is overwork. In a recent study of the causes of relapse by Dr. R. G. Ferguson of Fort Qu'Appelle, Saskatchewan, it is shown that overwork was responsible for slightly over 22 per cent of the relapses, and unhygienic living conditions for practically 10 per cent. Furthermore, it is noted that relapse is more frequent amongst those engaged in outdoor occupation than indoor. Outdoor occupations such as farming and general labour, are as a rule too strenuous for the tuberculous.

This leads us up to a consideration of special or modified treatment for the working man at existing sanatoria, and the results obtained at special institutions, such as Papworth in England. Ordinary occupational therapy as practised in the average sanatorium to-day, is I think an essential part of the sanatorium regime, but I do not think that it plays any significant part so far as his future employment is concerned. The Vetcraft Shops which are established in various parts of Canada only partly solve the problem, and they at present are available only to the pensioner. If they should be made open to the civilian tuberculous population, they would require some state subsidy, and the several types of occupations in them should be increased.

I ardently believe in the principle of a community for the tuberculous. The village settlement not only offers employment to those who cannot be employed elsewhere, but it affords them relief from the economic pressure of the outside world; and while providing work for the tuberculous patient also makes provision for his family to be brought up in healthy surroundings, and under such favourable conditions that their resisting powers may be built up and maintained.

The Committee of the Joint Tuberculosis Council of England admits, I believe, the success of the industrial settlements, and strongly recommends that such schemes be undertaken at existing sanatorium centres. It is thought that under such circumstances the labour of the consumptive may be made so remunerative that, although some subsidy will be necessary, the amount will not be large, and must be regarded as well spent, when the general advantages to the country are taken into consideration.

We are all greatly interested, at present, in the work of the Potts Memorial Hospital, Livingston, N.Y., where under the guidance of the National Tuberculosis Association, an experimental study is being carried on to determine suitable forms of employment for the quiescent cases of tuberculosis, which may enable them not only to remain well themselves, but at the same time support themselves and their families. The problem of the post-sanatorium or "after-cure" employment of the tuberculous is becoming more acute every day in Canada.

T. M. Sieniewicz,
Acting Chief Executive Officer.

March, 1927.

From Dr. J. H. Elliott, Toronto

To the Editor,

In discussing the question one must bear in mind the rather distinct differences between occupational therapy and vocational training. The former is to relieve the tedium of the prolonged physical rest, and with its application the question of an income from the patient's occupation is of relatively little importance. Vocational training, on the other hand, is an endeavour to teach the patient, who cannot safely return to his former employment, a new trade or occupation which will support him and his dependent family. There are a number of maxims to be remembered:

1. The "outdoor occupation" so often advised for the tuberculous is usually bad advice. Though it may be good as a means of prevention, it is bad as a means of cure. The majority of outdoor occupations are for the unskilled and are arduous and long hours are frequently demanded.

2. A large proportion of patients when fit for work may safely return to their former occupation.

3. The man who returns to his former occupation can usually earn more and be more contented than when attempting a new vocation.

4. "A good rule for an ex-patient to follow is to do the work he is accustomed to do, if he does it easily" (Pottenger).

5. The danger of relapse lies in the hours which should be devoted to recreation and sleep rather than in those devoted to work. There is more danger from improper recreation and insufficient rest than from unsuitable occupation.

6. The recently "cured" or "arrested" case must be content to do the work of one man in one working day and not endeavour to work overtime or under high tension. Moreover, a full day's work is only to be undertaken when the physician so advises.

In your article you say "the raising of poultry, fruit farming, and bee keeping are all advisable." Pottenger, on the other hand, says "chickens are hard to raise, and many a tuberculous patient has sunk all his savings in trying to raise them, and failing, found himself much worse off than he would have been had he followed what seemed to be a less healthful occupation." In England where local communities have engaged in some special occupation for many generations, or even centuries, vocational workshops and colonies may

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be a success. I doubt the success of such a scheme in Canada.

I think the only successful scheme will be one undertaken by a committee of interested industrial employers who through an organized bureau will endeavour to place each case in a suitable employment. This means an employment bureau for this special purpose. An important work for this bureau would be the securing of suitable houses for the working men whose incomes would be small. Small homes, of course, but bright, allowing adequate ventilation with an airy sleeping room, or preferably, a sleeping porch.

Sincerely yours,

11 Spadina Road, JABEZ H. ELLIOTT.
Toronto, March 8, 1927.

THE LISTER CENTENARY CELEBRATIONS

RECEPTION AT THE WELLCOME HISTORICAL MUSEUM

The series of gatherings in connection with the celebrations of the centenary of the birth of Joseph Lister was brought to a brilliant close on the evening of April 7th when a reception was held at the Wellcome Museum of Medical History in London.

The scene was one of great animation as the guests, the men wearing their orders, moved about in the brightly lighted rooms of the Museum.

In the unavoidable absence of Mr. Wellcome, the guests were received by Sir William Watson Cheyne, Baronet, K.C.M.G., F.R.S., formerly Professor of Surgery at King's College and by Professor Archibald Young, B.Sc., M.B., the Regius Professor of Surgery at the University of Glasgow.

In his opening address Sir Watson Cheyne described certain original pieces of apparatus devised by Lister which were on the table before him. They were for the reception and preservation of sterile liquids and for the purpose of holding liquid culture-media, Lister having begun his bacteriological studies before the discovery of solid culture media. There is in the museum a specimen of urine still sterile put up about the year 1878.

The exhibit which attracted most attention was the reproduction of a portion of the ward in the old Royal Infirmary at Glasgow where Lister first dressed a wound on antiseptic principles. It has the original doors, beds, tables, chairs, basins, bath, etc.

These and other objects, said the speaker, would help succeeding generations of students to visualize the methods and results of scientific research in medicine more vividly than could any other means.

Professor Young, who occupies Lister's chair at Glasgow, and was trained by MacEwen a pupil of Lister, gave a thoughtful and choicely worded address. By referring to a few statistics, he made us realize the astonishing diminution in the percentage of fatal cases following on operation especially when we remember the enormous increase in the number of operations performed to-day as compared with any pre-Listerian year.

Professor Young related that when he was a student he once had the privilege of seeing Lord Lister, namely on the occasion of his coming to Glasgow to deliver an address before the Student's Medico-Chirurgical Society. The debating hall of the Student's Union was crammed to the ceiling, and Professor MacEwen was in the chair. After the address was over, MacEwen in response to calls for a speech rose and said: "When the nightingale sings, all other birds are silent."

The next speaker, Sir St. Clair Thomson, was in a lighter vein; but at the outset he wished to refer to Lady Lister whose part in her husband's life he (Sir St. Clair) did not think had been sufficiently acknowledged during the past week. Lady Lister was a constant source of help to her husband in his various activities in the laboratory, in the study, and in society. There are extant many pages of notes written out by Lady Lister. "Her death," said the speaker, "broke Lister up, and he was never the same man afterwards."

Sir St. Clair went on to say that he had tried to find a defect in Lister's character, and had singularly failed. The most prominent defect, if defect it was, was a deficient sense of humour; in the Scottish phrase "he joked with deeficulty." His "hobby" was a study of the habits of beasts and birds such as one might indulge in a country walk or while botanizing.

A pleasing incident in the evening was the appearance on the platform of Lister's butler, Henry Jones, now in his eighy-sixth year. The old man was brought up from the audience and presented to Sir Watson, to Sir St. Clair and to Professor Young.

Sir John Samuel, K.B.E., secretary to the Lord-Provosts of Glasgow, in moving the vote of thanks, declared that the reason of Lister's success in convincing his opponents of their errors without antagonizing them while holding firmly to his own convictions was that "he was a great gentleman."

The vote of thanks was seconded by a grandson of Pasteur, Vallery-Radot of Paris, who paid a graceful tribute to the memory of the two great benefactors of the human race—Pasteur and Lister. Out of that friendship what wonderful things had arisen!

D. FRASER HARRIS.

London, April 9, 1927.

London Letter

(From our Correspondent)

The Lister Centenary.—It is impossible to write from London at the beginning of April and avoid any mention of the Lister Centenary celebrations although reports of the meetings and addresses will have appeared in the lay and medical press before this letter. Perhaps the most surprising feature of the various speeches which have been made is the way in which different aspects of Lister's life and work have appeared to different people so that overlapping has been very largely avoided. His Majesty the King spoke of Lister's long and patient study, his continuous experiment, his wide knowledge and penetrating insight. The Prime Minister, Mr. Baldwin, referred to Lister as the man, "the wonderful simplicity and integrity of his nature." Sir Humphry Rolleston mentioned Lister's upbringing in a Quaker family and the Bishop of Birmingham, at the Westminster Abbey service, described Lister's "attitude of spirit" as the modern scientist's creed. The scientific aspects of Lister's work were dealt with faithfully by representatives of the fields of physiology and bacteriology as well as surgery. Perhaps the most striking tribute, however, were the newspaper headlines which read "Operated on by Lister—And Still Living."

The Foundling Hospital.—London newspapers have contained many references to the Foundling Hospital during the past 12 months and many interesting developments are expected with regard to the future of the site on which it has stood since Captain Thomas Coram founded it and obtained a royal charter for its incorporation in 1739. Of recent years the hospital has supported about 500 children, and the average annual admission is between 40 and 50. Children are usually taken in the very early months of life, seldom after a year old, and they are sent to the country until they are 5 or 6. The usual principle adopted of recent years has been to restrict admission to the first children of unmarried women. After the stay in the country the children have hitherto come to the hospital in London and remained there, the girls to 16 and the boys to 14, and employment is found for them. Some 18 months ago the Foundling Hospital sold its magnificent site and moved, temporarily to a building near Redhill some 20 miles from London and the problem puzzling Londoners ever since has been—what is to happen to the site? A bill was presented in parliament for moving Covent Garden Market there but public opinion was roused against this course and at a recent second reading the bill was withdrawn. The most hopeful suggestion for utilization of at least part of the site is that the Hospital for Sick Children in Great Ormond Street, not so very far away, be re-erected on the Foundling Estate. The Children's Hospital is badly cramped for want of space for development and it continues to do magnificent work in buildings which have remained very much the same since its foundation in 1852. An up-to-date building on the Foundling site would enable this hospital to keep its position as the premier children's hospital of the world and it would continue to attract students from every part of the globe.

Harley Street.—It is an interesting problem in herd psychology as to what determines the district, in any large town, where the consultants live. Convenience, proximity to hospitals, centre of the resident population, all these factors have no doubt operated in the past and the City of London, where the headquarters of the profession were for many years, could at one time put up claims on all these counts. However, a move westward, begun by the resident population in the early days of the nineteenth century, soon saw the profession following and now a large number of streets in the borough of St. Marylebone are almost entirely occupied by consultants. At a social evening of the Royal Society of Medicine held in February, Mr. Percy Flemming, F.R.C.S., dealt with some of the topographical and historical aspects of Harley Street, one of the most famous of consultant thoroughfares. Marylebone was at one time a village on the north-western outskirts of London but it was enveloped by the growth of the metropolis and the early years of the eighteenth century saw the laying out of Cavendish Square, from the north-west corner of which a street was built and named after one of the most prominent political figures of the day, Robert Harley, first Earl of Oxford. At first the home of the aristocracy, Harley Street became popular for consultants after Sir William Jenner took a house there in 1851. Already, however, there appears to be a move northwards to the district round Regent's Park and it may be that the advent of the motor car will change some of the customs of the past and let the consultants live in some of the healthier suburbs rather than in the heart of the town.

Ear, Nose and Throat Work in London.—It has been very significant in the past that post-graduates seeking instruction in diseases of the ear, nose and throat have mostly patronized European centres. Recent developments in London, however, suggest that this will soon be unnecessary. In February a new institute of oto-laryngology at the Middlesex Hospital and the new buildings of the Royal Ear Hospital were opened on succeeding days. The former of these new establishments was endowed by the

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gift of £10,000 from Mr. T. R. Ferens of Hull. It consists of a library, three research laboratories, a common-room and a museum and lecture room. It is situated in close proximity to the ear, nose and throat out-patient department and to wards at the Middlesex Hospital and it has accommodation for ten post-graduates who wish to do research work. It is proposed that three studentships be established for students from the United States, the Dominions and from Great Britain respectively and Mr. Bernhard Baron has already offered to endow the British studentship. The Royal Ear Hospital, amalgamated with University College Hospital in 1920, has now been established in new buildings close to the main hospital by the generosity of Mr. Geoffrey Duveen who has provided all the necessary £75,000 in memory of his father. The new hospital is fully equipped for the investigation and treatment of diseases of the ear, nose and throat and has 40 beds for in-patients. The Ferens Institute and the Duveen Memorial should provide first-rate facilities for the teaching of this branch of surgery and post-graduates will no doubt soon find that the continental trip is no longer necessary.

ALAN MONCRIEFF

London, April, 1927.

Reports of Societies

HALIFAX BRANCH, MEDICAL SOCIETY OF NOVA SCOTIA

A well attended meeting was held at the Dalhousie Health Clinic on March 2, 1927. After disposal of routine business Dr. Victor MacKay opened a discussion on cancer. He outlined the history of cancer research, beginning at the time of Virchow, and showed that cellular pathology is the basis of present knowledge. The irritation and cell rest theories were reviewed. The question of heredity, predilection in certain races, cancer districts, etc., were discussed. He ended an excellent review with a very comprehensive résumé of the work of Gye and Barnard. Dr. John Stewart dealt with the cancer problem from the surgical standpoint. With regard to cancer of the breast he presented a very interesting statistical chart showing much better results from early than from late operation. He considered that the incidence of cancer is on the increase. Dr. S. R. Johnson directed attention to the use of x-ray and radium in the treatment of cancer, contrasting the very satisfactory results in some cases with the very disappointing results in others. The factor which accounts for the difference is unknown.

A general discussion followed which was participated in by Drs. Murphy, Birt and Schwartz.

At the meeting held on March 16th, the topic of the evening was diabetes. On this occasion Dr. H. H. MacKay, of New Glasgow, was a guest of the branch, and opened the discussion. Dr. MacKay reported six cases of diabetes with coma treated with insulin. After reporting the cases he outlined the regular method of treatment used, referring to laboratory methods, especially blood sugars, as done in New Glasgow. Dr. MacKay demonstrated the efficiency and safety of insulin, even as used in the country home. Of the six cases he had had but one death which occurred in a woman of 50, thin, with known nephritis. Death in this case was due to uræmia.

In discussing the paper Dr. K. A. MacKenzie paid tribute to the excellent and accurate work of Dr. MacKay. He mentioned, briefly, some of his own experiences in 130 cases of diabetes, of which 45 were treated with insulin, with 23 deaths. In almost every death there had been neglect to carry out orders and the mortality can be largely attributed to this cause. Dr. J. G. MacDougall gave a very comprehensive outline of diabetes in relation to surgery. In 80 per cent of deaths in surgical cases, due to diabetes, death took place in coma. He pointed out that many cases, which would have been surgical before insulin, can now avoid operation. Moreover, a poor surgical risk can be made a good surgical risk by administering insulin. Dr. Muir stated that, in his opinion, nitrous oxide was the best general anæsthetic to use in diabetics. He believes that the local anæsthetics are apt to favour gangrene. Spinal anæsthesia is considered good. Dr. Lessel suggested that careful regulation of the amount of oxygen given with ether tends to lessen the danger of ether to diabetic patients.

The eleventh meeting of the society for the season was held at the Dalhousie Health Clinic on April 5th, the date having been selected to coincide with the Lister Centenary. The President, Dr. Weatherbe, stated that the members of the society were particularly fortunate in having one of Lister's own house surgeons to speak to them on Lister's work, Dean Stewart, who is everywhere held in great esteem as an exemplar of the highest professional ideals.

Dr. Stewart reviewed most interestingly the

history of the early days of antiseptic surgery. Taking his queue from Pasteur, Lister experimented with various microbicides, of which he found carbolic acid to be the most generally useful. He used this in solutions of various strengths, the general tendency being to make the solutions weaker and weaker. Dr. Stewart explained in detail the types of dressings used, and the methods of sterilizing instruments, skin and the hands of the operator. The reason for the use of the carbolic spray was referred to. Lister's trip to Germany and his enthusiastic reception by German surgeons was described as one of the greatest events of his life. The Germans took up his methods with promptness and enthusiasm, even while his compatriots were hostile.

In answer to a question raised by Dr. Murphy, in the course of the discussion of the address, Dr. Stewart explained the relation of the work of Pasteur to that of Lister. He also mentioned that Lister's father manufactured the first achromatic microscope, and that Lister was one of the best microscopists of the time.

Dr. M. A. B. Smith stated that when he left New York after graduation, the Listerian principles were not practised in that city, but on his arrival in Halifax, he found that antiseptic technique was being used at all operations.

For the meeting on April 13th, the society was favoured by the presence of Drs. E. M. Eberts and A. H. Gordon, of Montreal, who were welcomed by a large attendance. Routine business was passed by and the whole evening devoted to the reading and discussions of papers.

Dr. Eberts was the first speaker, his theme being "Malignant Disease of the Thyroid Gland." He dealt very fully with the subject, quoting the opinions of many writers and research workers in this field as regards frequency, cause, pathology and treatment. He then reviewed his own goitre cases of the past five years, dealing, in particular, with his 14 cases of malignant goitre. He brought out especially that adenomatous goitre may at any time develop malignancy, and the treatment of this condition, *par excellence,* is early operation.

Dr. Gordon followed with a paper on "Rheumatic Fever." By way of illustrating the variety of manifestations he reviewed the history of three cases which he had recently seen. He contended that chorea, mitral stenosis, adherent pericardium, auricular fibrillation, and a variety of other so-called results of rheumatism should not be regarded as entities but really as rheumatism. Emphasis was laid on the importance of long rest in the treatment, which is without doubt the best safeguard against the complications which are so likely to arise in rheumatic fever.

Both papers were exhaustive in scope and admirably presented. They were appreciatively discussed by Drs. Hogan, MacDougall and K. A. MacKenzie, after which thanks of the society was tendered Drs. Ebert and Gordon by President Weatherbe. VICTOR MADER.

THE VANCOUVER MEDICAL ASSOCIATION

HOSPITALS AND MEDICAL SCHOOLS IN AUSTRALIA: RESULTS FROM RAMISECTION

The monthly meeting of the Vancouver Medical Association took place on March 5th, and had a special interest arising from the fact that there were present as guests Dr. Norman Royle, surgeon to the Lewisham Hospital, Sydney, N.S.W., Dr. Stanley Argyle, Minister of Health for Victoria, and Mr. R. J. Lowe, Inspector General of Charities in Victoria, both the latter connected with medical affairs in Australia and at present touring Canada and the States under the guidance of the Rockefeller Foundation and in the interest of medical education and hospital management in Australia. After a few business affairs were arranged, the Chairman, Dr. A. W. Hunter, called upon Dr. George Seldon to deliver the Osler lecture entitled "Medical Education" of which we shall publish an abstract in a future issue. His paper was discussed by Dr. Argyle, Minister of Health for the Province of Victoria in Australia, who expressed the pleasure of himself and friends at being invited to attend and hear the lecture upon a subject of special interest to their deputation; a subject to obtain information on which they had travelled many thousand miles across the sea. The problems confronting the profession in Australia in regard to medical education and research was practically the same problem that the lecturer had touched upon so ably in his address. In Australia, and especially in Victoria, they were endeavouring to bring their hospitals and medical education up to modern views. Practical work in the hospital should be brought into closer contact with the theoretical work of the medical schools. The University of Melbourne has a medical school of which it is justly proud, but it is not operated in conjunction with any hospital or laboratory for medical research. The Government of Victoria is desirous of altering this state of affairs, and Dr. Argyle said it was his good fortune to arrive in Canada, and on the first night of his arrival to hear such a complete exposition of the principles on which they should work. Mr. Lowe also expressed his pleasure in listening to the lecture, and regarded it as practically a résumé of the difficulties they were faced with in Victoria. Mr. Lowe's work was entirely connected with the organization and standardization of the hospital system in Vic-

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toria. When the Act under which he is working came into force three years ago they were faced with just the problems dealt with in the address. Without attempting, however, any criticism of the Vancouver General Hospital he felt much surprised to learn that the hospital had not a full time pathologist. It might interest the meeting he said, to know that they do not consider as first class any hospital with over 100 beds that has not a full time pathologist and bacteriologist, and a fully equipped laboratory. Another matter at which he was surprised was the ratio of beds to population. At present in their hospitals they approximated five beds to every thousand of the population, not taking into consideration cases of tuberculosis, infectious and chronic disease. With regard to the average duration of stay in the hospital from a patient they started at about 20 days and were getting down to 14 days. After the discussion on the lecture was over, Dr. Norman Royle, of Sydney, N.S.W., was asked to make some remarks on ramisection. He commenced by showing the film of a goat before and after ramisection and drew attention to the sustained nature of the kneejerk contraction following decerebration. The film was very striking and it was at once apparent that some change had occurred in the leg as the result of this operation. Just what these changes were was shown in the form of a table, each subject of which was briefly discussed.

1. Vaso-motor changes.
2. Changes in muscle tonus.
3. Improvement in muscular control.
4. Improvement in pulse.
5. Tremor and fasciculation.
6. Wasting and power.
7. Effect on control of viscera.

Dr. Royle emphasized the fact that the immediate change was largely vaso-motor. The succeeding changes less evident at first gradually developed. A long series of cinematograph pictures were shown demonstrating the actual results secured in his patients. Dr. Royle emphasized that this treatment was not a cure for spastic conditions, but merely opened the door to education or re-education depending on the type of case. Films illustrating many types of cases were shown including cases of spastic paraplegia and diplegia, choreiform seizures and cerebral palsies following trauma. He briefly mentioned his most recent attempt on the cure of Hirschsprung's disease claiming splendid results and referring his hearers to an article in the current issue of the *Medical Journal of Australia*.

Dr. Royle was very modest in his claims asking only for a chance to prove his contentions, and denying that this was anything in the nature of a panacea. He strongly emphasized the need for post-operative control and education. Structural changes within the muscles or joints are of course not altered and to secure full results, may require local operation such as lengthening tendons, or various fixation operations for their correction. The thanks of the meeting were warmly expressed to the several speakers.

THE OUT PATIENT MEDICAL STAFF OF THE TORONTO GENERAL HOSPITAL

Syphilitic Myelitis of Lower Spinal Cord; Acromegaly; Left Cervical Rib; Sclerosis of Retinal Arteries; Aneurism of Ascending Aorta

The March meeting of the Out Patient's Medical Staff of the Toronto General Hospital took place on the evening of March 16th. Dr. Lane presented an interesting case of a man aged 39, who was complaining of numbness symmetrically distributed down both legs and over the scrotum. There was some slight disturbance of the pain sensation, though the man had distinct pains in his legs. Of late the musculature had begun to atrophy quickly; knee jerks and ankle jerks were gone; Babinski reaction was marked; there was a distinct Romberg sign; heat and cold sensation was not disturbed; sexual desire was gone. The Wassermann reaction had been reported strongly positive and he was in the midst of a course of intravenous medication. The symmetrical distribution of the anæsthesia and the paræsthesia was very striking. The absence of abdominal and testicular reflexes, and the lack of bladder symptoms had suggested at first with the other signs that the condition present was a multiple sclerosis. The marked atrophy of the legs was an interesting additional symptom and one not so commonly present in either multiple sclerosis or syphilis of the cord. With the positive Wassermann the probability was, Dr. Lane thought, a very diffuse myelitis of the lower areas of the spinal cord, probably in the districts below the bladder centres. Spinal fluid was to be examined.

Dr. Thompson showed a case of acromegaly in a woman aged 20, who was married and had two children living and well. The disease had begun several months before with general pains and pronounced weakness, there were no effects noted as regards catamenia or other functions. Dr. Thompson's case showed well the prominent supra-orbital ridges, the enlargement of the lower part of the face, blunting of the nose and the acquiring by the hands of a typical spade-like shape, both clavicles seemed thickened. There was no separation of the teeth, the fields of vision showed some limitation at first, though in recent visits there had been little to be made out. The gradual onset

of the enlargement was, he regarded as, not unusual but in this particular case the pain had been more in evidence than was customary. Dr. Thompson sketched quickly the details of this disorder of the anterior lobe of the pituitary body mentioning the fact that if the disease began before the ossification of the bones that the result would be gigantism, while if the disorder began after the completion of the ossification, acromegaly was to be looked for. He reminded the meeting that the subcutaneous tissues were often thickened. As to the treatments that were known, he said occasionally some good results followed the administration of glandular extracts; in the majority of cases, however, if anything was to be hoped for, it would be from surgical treatment which regarded the enlarged pituitary as a tumour.

Dr. McPhedran presented an interesting case of "Cervical rib in the left side of the neck of a young girl in her teens," while the prominence of the rib could be easily felt there were as yet, he said, no outspoken nerve lesions; an unusual degree of pulsation could be felt immediately below the bony mass; this pulsation was evidently in the sub-clavian artery as pressure upon it obliterated the radial pulse. The x-ray picture showed a complete bony rib articulating with the process in the first rib by a very distinct joint. In the discussion which followed it was noted that the cervical ribs are rarely as complete in their formation as was evidenced by the skiagraph in this case. Many, if not the majority, have a costal process articulating with the 6th and 7th cervical vertebræ and the transverse process of the 6th vertebra, but do not extend into the first rib as bone, but are continued only as a fibrous process which will not show on the x-ray plate. These ribs never articulate with the sternum, ending always in the first rib or if, as sometimes happens, the first rib is rudimentary, into a bicipital rib. With conditions such as just described, associated anomalies of the brachial plexus were often met with. The anomaly which most frequently caused nerve lesions was an addition to the plexus from the second dorsal root, which owing to its low point of origin, was easily stretched over the bony extra structure forming the cervical rib. If not stretched over the rib it might occasionally be pinched between the two upper ribs. The subclavian artery might run between the ribs or loop over the top of the costal process and be unusually prominent as in the case now shown. It was the nerves of the plexus not the arteries which grooved the first rib. Many cases have no symptoms; in many, on the other hand, the necessary operation is postponed because the x-ray does not show the fibrous structure which by its presence is responsible for the trouble.

Dr. Valentine Stock showed a case of retinitis associated with arterio sclerosis and high blood pressure. There was a marked degree of twisting of the arteries and the back of the eye showed many fresh hæmorrhages, numerous scars and degenerated areas. Where the arteries crossed the veins the construction was such that with each pulsation the vein beyond the point of constriction was emptied of its blood; in many places in the eye grounds this process of squeezing out, or more properly, draining out of the veins, could be easily followed.

Dr. Gwyn showed a large aneurysm of the ascending arch which was giving rise to considerable pain around the lower part of the right chest. There had been a history of the accumulation of fluid in this side and the question was, whether the pain now was pleural or due to the beginning of pressure on the vertebral column.

The post-graduate lectures, arranged for by the Hamilton Medical Society, were given by Dr. Gwyn of Toronto, in the Hamilton General Hospital during the first week of April. Thanks to the kindness of the hospital authorities and the generosity of Dr. J. H. Mullin and Dr. N. Leslie the question of accommodation and material were easily met. Subjects dealt with were: (1) Pneumonia and its complications. (2) Rheumatism, endocarditis and heart disease. (3) Syphilis of the liver, Hodgkin's disease. (4) The anæmias.

The stated meeting of the Academy of Medicine was held April 5th. Dr. W. S. Bainbridge of New York, spoke on the present status of the cancer problem.

Details of the Donald Balfour lecture, given by Dr. W. J. Mayo on the date of the Lister centenary given in Toronto, appear elsewhere in this issue.

The annual reunion of the University of Toronto Medical Alumni Association will take place in Hart House, Thursday, June 16th. Business meeting for election of officers, etc., at 5 p.m. Dinner at 6.30 p.m.

OSLER MEMORIAL COMMITTEE OF THE CANADIAN MEDICAL ASSOCIATION;

Report of Committee

A meeting of the Osler Memorial Committee of the Canadian Medical Association was held on March 26, 1927, at 8.30 p.m.

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There were present Drs. F. J. Shepherd, A. Primrose, J. H. Mullin, Chairman General Committee; Campbell Howard, in the Chair. W. G. M. Byers, and Maude E. Abbott, Secretary of this meeting.

Dr. Mullin said the meeting had been called with the object of informing the Montreal members of the proceedings of the Committee to date, and for the purpose of arranging for the extension of the membership of the Local Committee in this city, and in the Province of Quebec. It was further desired to take advantage of this opportunity to make it perfectly clear to the Montreal group that it was not the intention or wish of the Hamilton Medical Society to propose any other than a purely local Memorial such as was outlined by Dr. Mullin in his article in the *Sir Wm. Osler Memorial Volume of the Museums Association*. A misunderstanding to the effect that the Hamilton Medical Society proposed inaugurating a nation-wide memorial, had apparently arisen last January, and demanded contradiction.

For the information of the Montreal members, the minutes of the meetings of the Committee to date were read by Dr. Mullin, after which the rough draft of the report, now under preparation, from this committee to the annual meeting of the Canadian Medical Association was submitted for discussion.

Dr. Primrose took exception to a clause in the report stating that the Osler Clubs, which had been already created as organizations be not concerned with the collection of this fund. He thought that such clubs, which had undoubtedly been called into being through a perception of the stimulus of Osler's work and personality, and whose members were all individually members of the Canadian Medical Association, might be very helpful in the work of propaganda incidental to the raising of the fund, although such clubs would naturally not function as an actual part of the machinery of this Committee. He thought that the statement in its present form might even give offence, and suggested omitting any mention of the words "Osler Clubs". Dr. Mullin objected to this on the ground that confusion might arise unless the independent nature of pre-existing "Osler Clubs" were specified. On the suggestion of Dr. Howard it was decided to alter the wording of the report in this particular to cover the point raised by both Dr. Primrose and Dr. Mullin. Dr. Shepherd said that the object of the fund should be limited, for the present at least, to the establishment of a lectureship or oration every three years. It was felt by the committee that the report already indicated this with sufficient clearness.

Dr. Primrose said that after the lectureship was inaugurated it might be possible to obtain volunteer lecturers for some years, thus allowing the fund to accumulate. The amount of fund required for establishing the lectureship was discussed. It was thought that $5,000 which was the amount raised for the Lister Oration was not enough, but that it would be wiser to proceed to raise funds without naming any definite amount.

It was suggested that this undertaking be called the WILLIAM OSLER MEMORIAL FUND.

Dr. Mullin requested an expression of opinion on the interpolation in the report of extracts from letters received expressing co-operation and proposing various forms which the memorial should take. Dr. Shepherd thought such excerpts should be limited. The feeling of the meeting was on the whole favourable to the interpolation of such extracts as brought forward new ideas or imparted real stimulus.

In the latter connection a letter was read from Dr. David Stewart of Ninette, Man., expressing his sympathy with the objects of the committee and stating emphatically that this Canadian Memorial must not end with the establishing of an oration every three years, but that its activities extend far beyond this, and should especially be directed towards the diffusion of the Osler spirit of good fellowship and scientific enthusiasm, and to the extension of knowledge throughout Canada of the lives of Osler, and of men of like ideals in the history of medicine, and that these objects could be best fostered by the organization of meetings for this purpose, and by addresses delivered in the interim of the oration years.

Dr. Maude Abbott thought this letter struck a very important note, and that this committee should add to its function of raising a Memorial Fund the additional one of conservation of the memory of Osler, and the Osler spirit in the profession of Canada through the inspiration of the study of Oslerian literature and the history of medicine. To this end she enquired whether a section on the history of medicine could be developed in the Canadian Medical Association on the recommendation of this committee. Dr. Abbott further suggested that the contents of Dr. Stewart's inspiring letter be used as propaganda.

Dr. Primrose thought the establishing of a Historical Section of the Association would probably not be feasible at the present time, but made the following suggestion:—

That the Canadian Medical Association be asked to feature Oslerian material, and to place at least one important paper on the history of medicine on the programme of every annual meeting.

The Secretary was instructed to write Dr. David Stewart on behalf of this committee, asking him to write a series of editorials beginning with the May number embodying the ideas and suggestions set forth in his letter.

Dr. Mullin said that the nucleus for the Province of Quebec should be formed here, and that Dr. Campbell Howard be asked to act as chairman. The following names were added to those already appointed to the local committee for this province:—

Dr. L. G. Mignault, Dr. H. S. Birkett, Dr. Pariseau, Dr. J. C. Meakins, Dr. E. St. Jacques, Dr. W. W. Chipman, Dr. A. D. Blackader, Dr. F. G. Finley, Dr. H. D. Hamilton, Dr. W. F. Hamilton, Dr. W. Grant Stewart.

It was arranged that Dr. Mullin should write to each of these gentlemen informing them that they had been proposed for membership in the local committee, and as corresponding members of the General Committee.

Dr. Yeo, of Charlottetown; Dr. Delaney, of Quebec; Dr. Gordon Hume, Sherbrooke; Dr. H. H. Murphy, Kamloops, B.C., were also proposed. Dr. Archibald Malloch was appointed member extraordinary. Dr. Mullin was given authority to appear before the executive and ask permission to have subscription forms printed in time for the annual meeting. The meeting adjourned.

M. E. Abbott.

Miscellaneous

RED CROSS OUTPOSTS DO SIGNAL SERVICE TO SETTLERS

A statement recently issued from Red Cross Headquarters in Toronto records the following activities. In the past year in the 37 Red Cross Outpost Hospitals, scattered through Northern Ontario, New Brunswick, Manitoba, Saskatchewan and Alberta, and operating in 1926, 6,820 people were cared for by the Red Cross nurses; there were 1010 operations, of which 234 were major operations; 515 children were born in the outposts; 178 schools were visited by the outpost nurses where 4,341 children were examined; and 3,300 homes were visited to give nursing care or to offer advice. One of the most interesting features of this report is that it is shown that 743 mothers, who must otherwise have gone without expert care when their babies were born, were cared for in the outposts or by the nurses in homes, and that the death rate among both mothers and their infants was at a minimum. Since these figures were sent in, two more outposts have come into existence in outlying sections of Northern Ontario and the Red Cross is making every effort to expand this useful service in pioneering districts to meet the ever increasing needs of remote settlers, in all parts of the Dominion.

An additional report from the Canadian Red Cross shows that since the year 1924, 808 classes in home nursing have been organized in all provinces, at which 10,000 women and girls have taken instruction and that 2,300 are now taking home nursing in the 305 new classes organized in the year 1926.

THE CONSEQUENCES OF INBREEDING

In an article in the *Reichsgesundheitsblatt*, Prof. Dr. Aichel, the director of the Kiel Anthropologic Institute, discussed the effects of inbreeding. Since ancient times, marriages of blood relatives have been regarded by the laity, and by many physicians as well, as of dubious outcome. The offspring of such marriages are said to be less virile and less fertile, and, in addition, are supposed to be frequently affected with manifestations of degeneracy, such as deafmutism, blindness and idiocy. Opponents of the theory call attention also to families (for example, the Ptolemies of Egypt) and even whole peoples in which inbreeding did not cause either degeneration or lessened fertility. They even emphasize the importance of inbreeding for the more rapid cultural development of mankind. Furthermore, loss of fertility is not confined to marriages between relatives but includes the whole population of the earth. Other causes than inbreeding must be sought in explanation of the destruction of a people. One of the most important factors is what may be termed "counter-selection," as a result of which the better educated and more cultivated families have fewer children than the less educated. That the offspring of marriages of blood relatives present certain diseases oftener than otherwise is because the offspring inherit stronger predispositions, coming through both parents. But, in the same manner, favourable predispositions that characterize both lines of descent may be manifested in double potency in the offspring. Therefore, from the scientific standpoint, the existing laws that permit the marriage of blood relatives within certain degrees of consanguinity need not be changed. When the marriage of blood relatives is contemplated, it is always desirable to scrutinize the personal histories of the ancestors on both sides for at least three generations back.

THE BLEACHING OF FLOUR

The Minister of Health in England has had special investigations carried on with regard to the treatment of flour with chemical substances, and a full report on the subject has now been

published. This report points out that the characters necessary in flour used for bread making are that it shall have the capacity to make a large well risen loaf of good texture which shall be white in colour. Flours deficient in these characteristics are frequently treated with chemical agents which may be either bleaching agents or "improvers" or both. The principal bleaching agents in use are nitrogen peroxide, benzoyl peroxide, chlorine, and nitrogen trichloride. Flour, after milling, changes slightly on keeping, its baking qualities improve, and its colouring matter is bleached. Imported flour from America and Australia if kept sufficiently long exhibits this ageing effect. British flours, which cannot easily be kept because of the absence of storage facilities and because of expense, are in this respect at a disadvantage regarding colour; nevertheless, some imported flour is bleached before reaching this country. It is said that a 60 per cent extraction of the wheat can by means of bleaching be made to look better than a 50 per cent extraction without bleaching.

"Improvers"

The substances used as improvers are principally chlorine, nitrogen trichloride, acid calcium phosphate, acid ammonium phosphate, and persulphates, besides extracts of malt and wheat germ. It is claimed for improvers that they enhance the natural baking qualities of flour by yielding well risen loaves of good volume and symmetry, of satisfactory texture, and of even aeration. "Strength" is the term applied to flours possessing this character, and it depends on the qualities of the contained gluten. Some wheats, notably English, are weak, but the properties of the gluten can be altered by the addition of certain salts and acids to the flour. It is claimed that by the use of improvers a more varied supply of wheats can be used and blended, and a flour of uniform baking quality thus maintained.

The Committee expresses the opinion that millers "are content rather to use more of what they themselves would call inferior wheats, relying on chemicals to make up the baking quality to the old standard."

Abstracts from Current Literature

MEDICINE

The Care of the Patient. Peabody, F. W., *J. Am. M. Ass.*, March 19, 1927.

The care of the patient which is the essence of medical practice, is discussed in a broad and comprehensive manner. "The practice of medicine in its broadest sense includes the whole relationship of the physician with his patient." In hospital practice the individuality of the patient is apt to be lost sight of. He is a "case" of mitral stenosis or what not. He is put through examinations of all his bodily functions, but his emotional state is apt to be left unconsidered. He has been removed from his home to a place where he is cared for by strangers. He may be worrying about his wife and children and his enforced financial loss. Emotional disturbance as a cause of extrasystoles is not recorded by the electrocardiogram, and as a cause of headache is not revealed by examination of the ocular fundi, of the urine, nor by taking the blood pressure.

Modern medical methods are sometimes subjected to the reproach of being over-scientific. If scientific method consists in making complete examination and proceeding by logical steps from the known to the unknown, that is, the conclusion, then our hospital methods may sometimes be criticized as not scientific enough because they may be incomplete. The patient himself may be left out of count. His anxieties, fears, oversensitiveness, homesickness, his situation in life with possibly thwarted ambitions, domestic skeletons in the cupboard, or hopeless outlook, may be unnoticed.

A study of the patient himself, therefore, is essential. It is scientific. Even in the rush of hospital practice it can be made. But our medical students, who later become hospital internes, need to be impressed with its importance. Once they have the right point of view they will find spare moments in their hospital work to get an insight into the patient's make-up and an idea of his home life, and to establish the personal contact which is the strong point of the doctor in private practice.

The patient with various complaints who has been put through many tests and dismissed as having "nothing wrong with him", all his tests having turned out negative, comes in for special consideration. This patient has probably consulted several or many doctors, but has got no satisfaction. He eventually resorts to Christian Science or chiropraxy. If the general practitioners who had the first inspection and examination of him had been alive to the necessity of studying the patient himself, much good might have been done, much misery saved, and reproach to the medical profession avoided.

"One of the essential qualities of the clinician is interest in humanity, for the secret of the care of the patient is in caring for the patient."

A. G. MORPHY

Basal Metabolism in Chronic Myelogenous Leukæmia. Riddle, Matthew C. and Sturgis, Cyrus C., *Arch. Int. Med.*, February, 1927.

It is recognized that the basal metabolism is characteristically elevated in untreated cases of leukæmia. No other afebrile disease, with the exception of hyperthyroidism, exhibits such a constant increase in heat production by the body. The underlying factor or factors which account for the increased basal metabolism in the former condition is still a matter for speculation and investigation.

Some workers observed that the basal metabolism which was greatly elevated before treatment with Roentgen rays, decreased only slightly with irradiation, although the white blood count decreased markedly.

Other workers concluded that the metabolism rose and fell with the white cell count, and that after irradiation with Roentgen rays, the basal metabolism often fell to within normal limits, rising once more as the white cells again increased in number. In their opinion the rise in the metabolism often preceded the increase of white blood cells, and was consequently of value as one of the indications for further treatment.

The authors in their present study have attempted to study the relationship between the alteration in the blood cells and the level of the basal metabolism; also the significance of the latter has been considered in relation to the diagnosis and the prognosis of chronic myelogenous leukæmia.

They found that in general, the degree of the elevation of the basal metabolism seemed far more in harmony with the clinical condition of the patient than with either the white blood count or the differential blood count.

Irradiation of the patients with Roentgen rays usually produced a transient rise in the basal rate for not more than three days. In patients who were benefited by the treatment this rise was followed by a rapid fall to normal limits where it usually remained for from three to six months. Patients in the terminal stage of the disease, however, continued to have an elevated metabolism despite treatment. A direct correlation between the pulse rate and the degree of elevation of metabolism was also found.

There appeared to be no fixed relationship between the basal metabolic rate and the degree of anæmia. The basal metabolism was frequently high, with high white blood counts and low with low white blood counts. The rate was usually high when the percentage of the young myeloid cells was great, and especially when their degree of immaturity was marked.

The commonly accepted view for this increased metabolism is that it is due to three causes: (1) an increased consumption of oxygen by the leukæmic blood; (2) the use of oxygen by the leukæmic cells elsewhere in the body than in the peripheral cells; and (3) the increased demand for oxygen by the over active tissues which are responsible for the production of the large number of white blood cells. In addition to these, the authors suggest that the increased rate of destruction of the white blood cells may be a factor of importance.

L. C. MONTGOMERY

Studies in Scarlet Fever. IV. Post-Scarlatinal Immunity in Patients Treated with Antitoxin. Davies, J. A. V., *Jour. of Clin. Inv.*, Dec. 20, 1926.

The object of this investigation was to see if the treatment of scarlet fever with antitoxin has any effect on the permanent active immunity which ordinarily follows an attack of the disease. It is assumed that the immunity in most patients who recover from scarlet fever is a response to the specific toxin produced by *Streptococcus scarlatinæ*, and that this toxin is present in the blood in the first week of the disease. Since the scarlatinal antitoxic serum rapidly neutralizes this toxin and so removes the stimulus which induces the permanent active immunity, it is theoretically possible that patients who have been treated with antitoxin may become susceptible again, after the relatively transient passive immunity conferred by the antitoxic serum has terminated.

It is difficult, of course, to judge as to the degree of immunity present, since many factors enter into its production. There may be fluctuations in the amount of immune bodies present at the time of exposure; or variations may arise from the site of the area involved in the infection, or from the local conditions promoting the spread of the infection and rapid absorption of the toxin (such as a coincident rhinopharyngitis), or from the intensity of the "seeding" with the streptococcus. The degree of immunity, therefore, present in those who have been treated with serum and those who have not, will always be relative and not absolute.

Fifty cases were examined of whom 34 had had serum treatment at least five months previously. The degree of immunity present was measured by means of the Dick test and the Schultz-Charlton blanching test, as well as toxin neutralization tests and the results obtained by the two methods were then compared. The original paper should be consulted for details. It may be said here that the conclusion reached was that there was no reasonable doubt that the scarlatinal cases which had received no antitoxin treatment, showed the development of a greater degree of immunity to the scarlet fever toxin, than those who had been treated with the antitoxin.

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Experience alone, however, will show whether or not the advent of scarlet fever antitoxin therapy will so alter the natural course of immunization to the disease as to increase the incidence of second attacks in those treated with the serum. H. E. MACDERMOT

The Association of Generalized Arteriolar Sclerosis with High Blood Pressure and Cardiac Hypertrophy in Chronic Nephritis. Branch, A., and Linder, G. C., *Jour. of Clin. Invest.*, Dec. 20, 1926.

This paper is a contribution to the discussion on the relationships between renal function and blood pressure changes, and cardiac and vascular alterations, and is based on the microscopical findings in the vessels of the kidney and other organs in ten consecutive cases of chronic nephritis in young patients (under 34). These patients had been under clinical observation for some time.

Of these ten cases, three died of intercurrent infections, and seven came to typical nephritic deaths. The examination of the latter group added little to the clearing up of the problem regarding the order of incidence and causal relationships of chronic nephritis, hypertension, cardiac enlargement, and arteriolar sclerosis. Each of these seven patients had hypertension and diffuse glomerular lesions, and all but one had cardiac enlargement, and also arteriolar sclerosis. By the time nephritis has run its course all these conditions are usually present. It is only the examination of material from cases of chronic nephrits which have died from intercurrent causes which gives information as to the probable order of incidence of these changes. And even when such deductions are possible they permit only of inferences as to the causal relationships. For example, if it were found that hypertension always precedes arteriolar sclerosis in nephritis, we still would not be able to say whether the hypertension causes the sclerosis, or whether both conditions are independent results of the nephritis, one developing more rapidly than the other. One of the cases which died of nephritis had hypertension but no arteriolar sclerosis, which shows that the latter does not always precede hypertension, and therefore some condition in the disease other than arteriolar sclerosis can bring about increased blood pressure.

This case was particularly interesting, since it also showed neuroretinitis for several months, accompanied by renal insufficiency advancing to uræmia. It confirms the view of Volhard and Fahr that in one group of nephritics, typified by young subjects reported in the present paper, the nephritis is the initial lesion, exciting the development of hypertension and arteriolar sclerosis; whilst in another usually older group, arteriolar sclerosis is the initial lesion, exciting the hypertension. Renal insufficiency eventually develops either from sclerotic strangulation of the glomeruli or from inflammatory processes added to the sclerosis. Another observer (Evans) is also quoted as believing that glomerulitis and arteriolar sclerosis are two separate and independent results of one cause, which he regards as probably an infection.

According to the data gathered in this investigation, the apparent interpretation concerning the order of incidence is, nephritis, hypertension, arteriolar sclerosis. But the authors conclude that it is quite possible that no generalization can be made, but that the order of incidence and the causal relationships vary, even when the terminal results are similar. H. E. MACDERMOT

SURGERY

Malignant Growths of the Thyroid. Pool, E. H., *Ann. of Surg.*, January, 1927.

Malignant growths of the thyroid gland have had many features not completely understood, due to three factors: (1) the apparent rarity of the condition; (2) the varying histological picture; (3) the neglect of follow-up records.

Carcinoma may originate in the parenchyma, in an adenoma or in aberrant thyroid tissue. If originating in the parenchyma, it may be an extremely lawless type of growth, plainly evident or, of an adeno-carcinoma type with little to suggest malignancy. In contrast to carcinoma originating in an adenoma the spread is by the lymphatics. Carcinoma originating in an adenoma begins in the capsule. When it penetrates the capsule, the growth is the same as in the foregoing type. It is difficult to be certain about malignancy in certain carcinomas beginning in adenomata. The deciding point is blood vessel invasion, according to Graham. It is evident that 90 per cent of carcinomas of the thyroid originate in adenomata, but there are no authoritative statistics to decide the frequency of its occurrence.

The author is agreed with other authorities that Cohnheim's theory of normal thyroid tissue giving metastases is untenable and that a metastasizing goitre is always malignant and that malignant cells are to be found in the thyroid.

The treatment is summarized as follows:—

Removal of adenomata is the best way of treating carcinoma of the thyroid, *i.e.*, prophylaxis. If carcinoma is discovered after the removal of an adenoma, thorough postoperative irradiation is indicated. Cancer not limited to an adenoma is rarely cured by surgery. When the clinical diagnosis is definite, irradiation is in general preferable to surgical removal. R. V. B. SHIER

Post-Operative Pulmonary Embolism. Speed, Kellogg, *Ann. of Surg.*, January, 1927.

From the records of the Presbyterian Hospital the author has gathered 30 cases of post-operative pulmonary embolism which have occurred during the past 14 years. The number of deaths in this series was 23, a mortality of 77 per cent. The operative wound was infected in 12 cases. There was post-operative fever in all but five. Leucocytosis was present in all but four. There was thrombosis of the veins of the leg in seven cases. The initial symptoms were usually a sharp pain in the chest referred to the midline, either substernal or epigastric. In only 11 cases were there positive chest findings.

In a review of the literature, the author states that De Quervain found that three-fourths of all true post-operative deaths, after operations of the stomach, are caused by lung complications, the result of emboli. At St. Mary's Hospital, Rochester, the mortality from pulmonary embolism, over a large series of cases, was 0.07 per cent. Cutler and Hunt state than one in every 142 will die of pulmonary complications, the result of emboli.

Intravascular thrombosis is dependent on, (1) thrombokinase, derived from the body tissues, and (2) venostasis in, or about, the great veins. The first portion of a thrombus is due to an excessive proportion of platelets. Some of the platelets break down, liberating thrombokinase thereby starting clotting, the resulting clot containing blood cells and fibrin.

There are two types of thrombus, aseptic and septic; the former friable and liable to become detached; the latter in a constant state of softening and disintegration. The resulting pathology in the lung depends on the size of the embolus and whether it is aseptic or septic in character. In the first group, there is a large embolus occluding the pulmonary artery, cutting off the blood from one or more lung lobes. Death follows in all but a small percentage. In the second group, there is a moderate sized embolus resulting in pulmonary infarcts. This type gives a mortality of 12 to 15 per cent. In the third group, there are small emboli, often unnoticed, giving few physical signs, rarely hæmoptysis, and no deaths unless the infarct is septic.

After discussing the various sources of emboli, which, from the surgical standpoint, are usually from the veins of the leg, the pelvis, the uterus, or those about an inflamed appendix, as well as from the deep epigastric veins, the author goes on to discuss pre-operative measures, operative technique, and post-operative care from the standpoint of prophylaxis.

Pre-operatively, the patient should be put in the best possible physical condition. Careful chest examination is very important. Foci of infection, aseptic teeth, tonsils or sinuses should be eliminated. Digitalis should be given to improve the general circulation and blood pressure. Body fluids should be adequately restored by saline or glucose solution. At operation, there should be the minimum of trauma. Sharp dissection should always be employed. Rough clamping, harsh retraction, massed ligatures must be eliminated. Septic areas must be thoroughly drained. After operation, measures which favour venostasis must be avoided. Fluids should be administered freely. The patient should be allowed to change position frequently and digitalis administered in an endeavour to keep up an efficient circulation.

R. V. B. SHIER

The Cause of Post-Operative Rupture of Abdominal Incisions. Freeman, Leonard, *Arch. of Surg.*, Feb., 1927, xiv, 601.

In view of the results of 15 experimental laparotomies on dogs it is suggested that both complete and subcutaneous rupture of surgical abdominal wounds may be due to faulty suture of the peritoneum. It is supposed that omentum or intestine can escape between loose stitches and progressively separate the raw surfaces of the incision. This process of separation is thought to be assisted by swelling of the extruded mass, serous exudation, and increase of intra-abdominal pressure in vomiting and distension.

R. R. FITZGERALD

Diabetes and Pregnancy. Lambie, C. G., *J. of Obst. & Gyn. of the British Empire*, vol. xxxiii, No. 4.

Sugar or acetone in the urine during normal pregnancy is frequently seen. Benign glycosuria may be due: (1) to a lowering of the assimilation limit for carbohydrates as seen in the early months of pregnancy; (2) to a lowered renal threshold, which is characterized by glycosuria without hyperglycæmia; (3) to lactosuria seen usually in the puerperium. Acetonuria may be caused by starvation, lowered carbohydrate tolerance, nervous influences exciting glycogenolysis, etc. These conditions must be differentiated from true diabetes.

Although uncommon, pregnancy and diabetes may co-exist. Diabetes causes a functional disturbance of ovulation, associated with which there may be sterility and menstrual disturbances. Not more than one to five per cent of diabetic women become pregnant, although recent experiments have shown pregnancy occurring in completely depancreatized dogs who were treated with insulin.

Pregnancy has an undoubtedly unfavourable influence on diabetics. In those predisposed to the disease, it is often the initiating factor,

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while in former diabetics it may cause an exacerbation. Diabetes occurring for the first time during pregnancy usually shows itself, during the fifth or sixth month, coming on insidiously. Occasionally an attack of coma is the first indication of its presence.

The prognosis is better in cases beginning during pregnancy than when pregnancy occurs in an individual already suffering from diabetes, due partly to the fact that the already injured pancreas stands further loss of function less well than one injured for the first time. The immediate prognosis for the mother has been greatly improved by the advent of insulin. Since a diet relatively high in carbohydrates is necessary to ward off an acidosis, without insulin it was difficult to rest the pancreas. As pregnancy advances some authorities have noted a deterioration of tolerance, while others have observed an improvement in tolerance toward the end of pregnancy. After delivery or after death of the fœtus *in utero*, there may be an exacerbation of the condition in some cases, while in others improvement occurs. Clinical evidence is contradictory.

The maternal mortality is estimated by different clinics between 25 and 50 per cent. Labour is apt to be premature and difficult owing to the large size of the child, and diabetics are particularly prone to puerperal infection. The fœtal mortality is estimated at 50 per cent while 80 per cent of those which survive labour, die a few days later. Hydramnios is common. Hypertrophy and hyperplasia of the islands of Langerhans in the fœtal pancreas has been noted in children dying a few days after birth.

The treatment of the pregnant diabetic is dietetic as it is in the ordinary diabetic. The calorie requirements of a pregnant woman are only 4 per cent above the normal, hence only a small addition to the energy value of the diet is necessary.

The tendency to acidosis may be avoided by the administration of large amounts of carbohydrates, plus doses of insulin to assure efficient storage and combustion of carbohydrates. Insulin exerts no deleterious influence on the fœtus, and lessens the tendency to premature labour and hydramnios. The blood sugar should be tested from time to time especially in the last trimester.

Diabetics should be warned against pregnancy, but should pregnancy occur, if the woman is anxious for a child and is willing to submit to careful dieting and treatment the pregnancy may be permitted to continue. Ill-nourished subjects are unsuited to pregnancy. If a rapid loss of tolerance occurs, in spite of treatment, termination of pregnancy is advisable. Insulin should be given during labour, and carbohydrates in easily assimilable form. Lactation should be avoided as it puts extra strain on the mother and necessitates the intake of more food.

ELEANOR PERCIVAL

PÆDIATRICS

The Bone Changes Occurring in Renal and Cœliac Infantilism, and Their Relationship to Rickets. Parsons, L. G., *Arch. of Dis. in Childhood,* February, 1927, vol. ii, No. 1.

Children suffering from renal infantilism are always stunted in growth and show a delay in the appearance of the secondary sex characteristics. Apart from the retardation of development the most characteristic symptoms are polydipsia and polyuria, often of extreme degree, associated with nocturnal incontinence. The facies is sallow and wrinkled, the urine is of low specific gravity and contains albumen, and death occurs from uræmia, usually in the second decade.

After reviewing briefly some of the literature on bony deformities associated with albuminuria, the author discusses the radiographic manifestations of the bony changes and the blood chemistry findings in five cases under his observation. He discusses fully the recent work on the chemistry of rickets and the hypotheses put forth by (1) Howland, that the rachitic bone tissue remains uncalcified just so long as calcium and phosphorus are supplied to it in such low concentrations that precipitation of normal calcium phosphate cannot take place, and (2) Robinson, that the cure of rickets is not a pure physico-chemical process but that the osteoblasts and cartilage cells of the young animal by their cellular activity cause a deposition of the salt in the ossifying zone.

The factors necessary for the prevention of rickets are usually stated to be an adequate supply of calcium phosphorus and vitamin D in the dietary. Renal rickets develops and persists in spite of an adequate supply of all these factors and it would appear that rickets may have an endogenous as well as an exogenous origin.

The author summarizes his article thus: "The bone deformities associated with renal infantilism are those of true low-calcium rickets, and have their origin in the inability of the kidney properly to excrete phosphate. As a result of this inability on the part of the kidney to excrete phosphorus the blood calcium becomes relatively low and rickets occurs. During those periods in which the kidney is functioning better and excreting more phosphorus the calcium-phosphorus ratio becomes relatively more normal and healing may take place. The blood calcium is maintained at a higher figure than is usual in severe nephritis with phosphate retention, by the mobilization of calcium from the bones, and this is another

factor in producing rickets. When the phosphate is better excreted the serum calcium automatically tends to rise to a higher level, and therefore the necessity for obtaining calcium from the bones is lessened and healing may occur. The mobilization of calcium from the bones may be considered as a protective mechanism for the prevention of tetany and therefore be, in part, the explanation of its infrequent occurrence. Another factor in the prevention of tetany is the occurrence of acidosis, for this also mobilizes calcium from the bones and favours its ionization. Tetany sometimes occurs in renal rickets because the 'free' calcium is reduced relatively and may indeed be reduced absolutely; whereas in chronic nephritis the free calcium is normal, the reduction in calcium being due to diminution in the amount of 'bound' calcium."

He concludes that the bone deformities are those of a true low-calcium rickets caused by the inability of the kidney to excrete phosphate. The blood shows lipæmia, nitrogenous and phosphate retention and an acidosis. The blood calcium, while low compared with blood phosphorus frequently shows normal values. Healing of the rickets may occur in those periods in which phosphorus excretion improves materially, or when the growth period is over. Treatment of renal rickets by ultra violet radiation is contra-indicated. R. R. STRUTHERS

Studies on Experimental Rickets. McCallum, E. U., Simmonds, N., and Becker, J. E., *Am. J. Dis. Child.*, February, 1927.

The authors have carried out careful and well controlled experiments on rickets-producing diets in rats. They conclude that the diet of the pregnant and nursing mother is of paramount importance in determining the quality of milk which she will produce.

When female rats are fed on cod liver oil before mating, during pregnancy and during the first two weeks of nursing the young are afforded an easily demonstrable protection against rickets.

The prevalence of rickets among both breast-fed and bottle-fed infants may in part be due to the unsatisfactory condition of the expectant and nursing mother brought about by an unwise selection of food. Even a diet which is well constituted except for a deficiency of the antirachitic vitamin may, in the absence of an appropriate amount of sunlight, fail to safeguard the young against malnutrition resulting in rickets, especially when the food of the young is deficient in vitamin D as it becomes independent of the mother. It seems justifiable, therefore, to insist on the importance of the expectant mother and the nursing mother taking suitable amounts of cod liver oil, as well as the importance of giving it to the infant.
LILLIAN A. CHASE

Epilepsy. Talbot, F. B., Metcalfe, K. M. and Moriarty, M. E., *Am. J. Dis. Child.*, February, 1927.

A study of the effect of ketogenic, that is, high fat diet was made on epileptic children. The ketosis as shown by acetone and diacetic acid in the urine and by the lowered CO^2 combining power of the blood was associated with a diminution or cessation of attacks. This gives the greatest promise of improvement of any method as yet devised in the treatment of epilepsy of childhood. LILLIAN A. CHASE

The Treatment of Erysipelas with Blood Transfusion. Schaffer, A. J., and Rothman, P. E., *Am. J. Dis. Child.*, January, 1927, xxxiii, 116.

The authors, after reviewing the recent literature on erysipelas in infancy, report a series of 101 cases of the disease. In the 19 cases treated by transfusion, the mortality of the various age groups was distinctly less than in the 82 untreated. It has been consistently noted that in the successfully treated patients, the margin continues to spread for from 12 to 24 hours following the treatment, after which the whole lesion fades rapidly, which shows a similarity to the reaction of the diphtheritic membrane to antitoxin. R. R. STRUTHERS

People who failed to get sufficiently sunburned last summer may have hopes for next summer, because the activity of the sun, as measured by the sun-spot cycle, is still increasing and will probably continue to do so until the end of 1927 or the beginning of 1928, according to Miss Hazel M. Losh, of the Mt. Wilson Observatory, California, who reported researches made jointly with Dr. Seth B. Nicholson. Sun spots were at a minimum in 1923 and since then they have been increasing in number. During the last few months the solar activity has been about as great as in 1917, when the last maximum occurred. But there is this difference. In 1917 the spots were near the equator of the sun, as they always are when the cycle has reached its height. This fall the spots, though numerous, have been nearer the poles of the sun than in 1917, and this indicates, it was said, that the maximum has not yet been reached. If the maximum comes about a year from now the sun-spot period will be only about ten years long, a year shorter than the normal period.—*Science Supplement*, Jan. 28, 1927.

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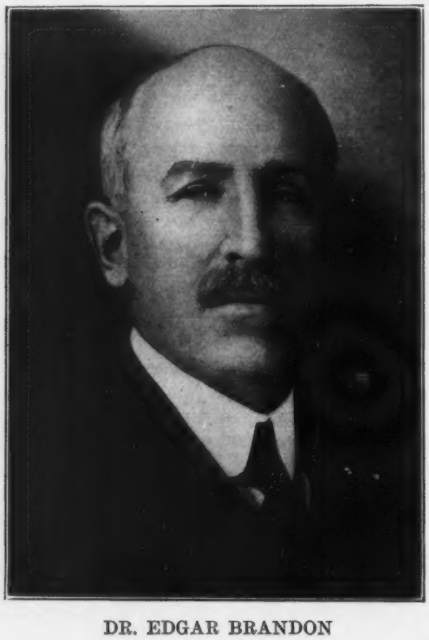
Obituaries

Dr. Edgar Brandon.—It is with sincere regret and a feeling of personal loss that we chronicle the death of our late President, Dr. Edgar Brandon, which occurred at his home in North Bay, on Wednesday, March 30th, 1927. Born in Cannington, in July, 1878, he attended the Cannington Public School; after leaving which he became a student at the Lindsay Collegiate Institute. He commenced his medical course at Trinity Medical College, Toronto in October, 1898, and graduated in 1902. He was an earnest and capable student and was highly esteemed by his teachers and by his fellows in the classrooms and in the University Halls.

After graduation he acted as a relieving physician in the wards of the Sick Children's Hospital, and in 1903 he was elected on the house staff of the Toronto General Hospital.



DR. EDGAR BRANDON

In 1904 he settled in North Bay, where he practised continuously until the time of his death. He was married in 1913 to Miss Ethel Thompson of North Bay, who with three children survive him.

In 1911, Dr. Brandon was appointed Medical Officer of Health for the town of North Bay, and in this capacity he rendered continuous service, characterized by efficiency, impartiality, fearlessness and good judgment up to the time of his death. He was one of the outstanding local health officers of the province. In addition to the above duties he acted as Councillor for District Number 9 for six years, and was largely instrumental in organizing county medical societies in his area, and in increasing the interest of the practitioners of his district in the work of the provincial association.

In 1925 he was elected First Vice-President of the Ontario Medical Association, and in 1926 he was honoured by the Association in being chosen as its President—the position in the Association, occupied by him at the time of his death.

His passing is sincerely mourned by his fellow townsmen, who have lost a capable physician, a genial friend and a public-spirited citizen; by his medical confrères, who experience the loss of a colleague, who could always be depended upon; and by our Association, who by his death have lost a competent and wise Executive, and a leader in progressive medical thought, who was characterized by high ideals, courage, and the capacity and the will to put the interests of the general profession before personal interest. W. J. BELL

Dr. Guy Belanger. It is with regret that we note the death of Dr. Belanger which occurred at the United States Sanatorium at Walum Lake, R.I., at the age of 23 years. Dr. Belanger was a graduate of the University of Montreal in 1925.

Dr. Percy Churchill Woodworth, of Kentville, Nova Scotia, died at the Victoria General Hospital, Halifax, on the 25th of March last. He graduated in medicine at Dalhousie University in 1892. His medical course was broken by a year during which he was attached to an expedition to the Arctic Circle, on which he had many interesting experiences and made a number of valuable observations. After graduation he settled at Kentville, where he continued in practice until within a few weeks of his death. He was an athlete of some note, and in 1890 came second to Paulson in world's championship speed skating contest. His father, the late Douglas B. Woodworth, represented Kings County in the Federal Parliament for many years. Dr. Woodworth was twice married, first to Miss Carrie O'Key, who died some years ago and second to Mrs. Percy Bishop, who survives him. A son, who served through the war, was killed in an accident a few years ago. A daughter, Marguerite, is in Paris with an aunt, Madame Labori, whose husband gained fame in the legal defence of Dreyfus.

Dr. Archibald MacLean died in Sarnia early in April. Born at Leeds in the Province of Quebec, Dr. MacLean graduated at McGill in 1867 and practised medicine in Sarnia for 24 years, giving up practice to fill the office of Registrar of Deeds for the county of Lambton. In addition to his medical and political duties Dr. MacLean was active in civic affairs, he was a member of the Board of Education, President of the Children's Aid Society and at different times had been Secretary and President of the Sarnia General Hospital Board.

Dr. Henry Yarwood Baldwin died suddenly at Edmonton on March 28th in his 78th year. He was a graduate of Victoria Medical College, Cobourg, Ontario, in 1881. He was a grandson of the Hon. Robert Baldwin, a former premier of Upper Canada prior to Confederation. Dr. Baldwin was one of western Canada's pioneer physicians, having come west the same year in which he graduated, and was the eighth doctor to register after the organization of the College of Physicians and Surgeons of the North West Territories. For a space of ten years he was medical officer to the Indians at Fort Vermillion. This place is still an outpost, being several hundred miles north of Edmonton.

News Items

AUSTRALASIA

The second Australasian Medical Congress of the British Medical Association was held at Dunedin, New Zealand, in February last, and reports show it to have been highly successful in all respects. There were close on 600 members of the profession in attendance, including representatives from Great Britain and the United States, and the proceedings of the congress were combined with the formal opening of the new medical school block of the University of Otago, which was performed by the Acting Premier, the Hon. W. Downie Stewart. Mr. Stewart referred in his speech to the extraordinary natural advantages enjoyed by New Zealand, and dwelt also on the fact that health was a national ideal of the country, and one which was capable of approximate realization. Her geographical configuration tended to the production of towns of moderate size and a well distributed population, and not of great metropolitan conglomerations with their vice, crime and squalor. She had no racial troubles. The Maoris were happy and contented, and, he said, were the only native race in contact with Europeans who were not declining.

The President, Dr. L. E. Barnett, referred to the stimulation and correlation of research in cancer in the various Australasian centres. Sydney University had raised over £100,000 in an appeal to the people of New South Wales for this purpose. The Royal Commission on Health for Australia had made valuable investigations into public health matters, and had recommended that a health research council be established and given an endowment of £30,000 per annum. There was also a movement on foot for the inauguration of an Australasian College of Surgeons, which would endeavour to combine the good points of the Royal College of Surgeons with those of the more recently founded American College. Modifications in the hospital system were receiving attention, largely stimulated by the investigations and reports of Dr. MacEachern on his visit last year.

Amongst the papers included in the very full and varied programme may be noticed one on poliomyelitis, with special reference to the outbreak in New Zealand in 1924-25, in connection with which a good deal of experimental work had been carried out. Steps were taken early in the epidemic to issue a memorandum on diagnosis, and there was little doubt that this, together with the preventive measures employed had resulted in a low paralysis rate, though the case mortality was high. The virulence of the infection was found to increase when restrictive measures for the patients were imperfect. Infection occurred chiefly from personal contact with patients or carriers: there was no evidence of insects being concerned, or any other intermediate host. Human convalescent serum had proved to be a specific in promoting rapid recovery and in preventing paralysis if given in the pre-paralytic stage. Attempts to inoculate monkeys and rabbits with the virus had failed.

Professor Cleland described the tuberculous lesions found in 800 Australian necropsies. His conclusion was that tuberculous lesions were less frequent in Australia than in Europe.

FOUNDING OF A COLLEGE OF SURGEONS IN AUSTRALASIA

After a long period of discussion and deliberation the College of Surgeons of Australasia has been founded and is now carrying on its special functions. The idea of founding this body seems to date back to 1920, or a little earlier, and appears to have originated simultaneously in a great many prominent practitioners. We gather that at present it is a voluntary association of individuals bound by a pledge, which anticipates gaining in the future such respect and recognition from the profession as will allow it to seek incorporation under one of the Companies' Acts or possibly a Royal Charter.

Its objects are:—

"To cultivate and maintain the highest principles of surgical practice and ethics, to safeguard the welfare of the community by indicating that its fellows have attained a high standard of surgical competency and are of a high character, to educate the public to recognize that the practice of surgery demands adequate and special training, to promote the practice of surgery under proper conditions by securing the improvement of hospitals and hospital practice, to arrange for adequate post-graduate surgical training at universities and hospitals, to promote research in surgery and to bring together the surgeons of Australasia and New Zealand periodically for scientific discussion and practical demonstration of surgical subjects."

GENERAL

International Medical Post-Graduate Courses will be held in Berlin from September 15th to October 31st. Every medical man who intends to visit Germany or particularly Berlin for the purpose of continuing his studies is advised to get into touch with the Bureau Kaiserin Friedrich-Haus, Nos. 2-4 Luisenplatz, Berlin NW 6, which has an official character and furnishes information quite objectively. The medium of instruction is German, but there are a number of lecturers who are able to instruct in the English, French or Spanish languages. The Bureau would be very glad to furnish addresses where suitable accommodation is available, and to give information in regard to cost of living, etc., also to arrange facilities for seeing operations in clinics and similar services.

NOVA SCOTIA

Dr. Joseph Hayes, of Halifax, has been appointed Field Supervisor of the Nova Scotia Tuberculosis Commission.

Drs. J. G. MacDougall, A. C. Jost and W. H. Hattie, all of Halifax, were in attendance at the Conference of the Medical Services in Canada held at Ottawa late in March.

Drs. Judson Graham and Victor Mader have been

appointed to the staff of the Dalhousie Clinic, to fill vacancies caused by the death of Dr. Vernon Miller and the resignation of Dr. Philip Weatherbe.

Dr. J. E. LeBlanc of West Pubnico has been contributing letters to the Halifax newspaper in which he appears as a strong advocate of instruction in the classics.

Dr. J. J. MacDonald, New Glasgow, has been elected president of the Amateur Athletic Association of his town, and Dr. John Rankine, Halifax, president of the Lorne Aquatic Club.

Drs. John J. Roy of Sydney, Smith L. Walker of Halifax, L. R. Morse of Lawrencetown, and Ross Millar of Amherst, represented the Medical Society of Nova Scotia at a Maritime Conference arranged by the Canadian Medical Association at Moncton on the 24th and 25th of March.

Dr. Freeman O'Neil of Sydney was very severely injured when he was struck by a motor car on the evening of April 3rd. He was rendered unconscious and his injuries necessitated removal to hospital. For some days the issue was in doubt, but the reports are now favourable and it is expected that he will soon be quite all right.

The vital statistics of Nova Scotia for November last, recently published by the Department of Health, indicate that there were 897 births and 463 deaths during the month. Compared with the corresponding month of the previous year there was a marked decline in the number of deaths from pneumonia and a slight decline in respect to tuberculosis. The infant mortality rate was 76.9—an increase of 20.1 over the previous November.

According to the report of the Medical Superintendent, Dr. F. E. Lawlor, there were 709 patients under treatment at the Nova Scotia Hospital (for the insane), during the year ended September 30th last. The number of admissions (227) was the smallest for five years. The discharges numbered 234, of whom 86 were listed as recovered and 53 improved. Based on admissions the recovery rate was 37.9 per cent. Surgical operations numbered 135, with one death—due to volvulus. Dr. Lawlor reports that the wards for disturbed patients have become crowded, and asks for more accommodation for such patients. He also asks for more adequate provision for hydrotherapy. The training school for nurses continues to be conducted with a high standard, and is an important factor in maintaining the efficiency of the hospital.

The sixtieth annual report of the Victoria General Hospital was "laid on the table" during the recent session of the Provincial Legislature. Mr. W. W. Kenny, the superintendent, reports the number of admissions for the year as 4176, and the total treated as 4354. Of those discharged, 2083 were cured; 1225 improved; 633 unimproved. Deaths numbered 192, a mortality rate of 4.41. The ambulance responded to 742 calls. The average daily cost per patient was $3.88. The private pavilion was operated on a self maintaining basis. In the laboratories a total of 11,266 specimens were received and reported upon. In the x-ray department 3,147 examinations were made and 626 treatments administered. The radium department, in operation for only five months, afforded treatments to 102 patients. The radium emanation equipment is proving most useful. The training school for nurses had a very successful year, with a graduating class of 28.

In his report for the year ended September 30, 1926, recently presented to the Provincial Legislature, Dr. A. F. Miller, medical superintendent of the Nova Scotia Sanatorium indicates that 550 patients were under treatment during the year, of whom 175 remained in residence at the close of the year. In discussing the results of sanatorium treatment, Dr. Miller states that follow-up studies during the past ten years show that of 239 patients admitted in the early or minimal stage of tuberculosis, 78 per cent are living, while of 270 patients admitted in the far advanced stage, only 41 per cent are living. Most of the early cases are restored to health and earning power, but this can be said of only a few of the advanced cases. Dr. Miller refers to the value of the sanatorium as a preventive factor and in the education of the public relative to the problems of tuberculosis. Reference is made to the usefulness of artificial pneumothorax, phrenicotomy and extra-pleural thoracoplasty as demonstrated at the sanatorium. The treatments advocated by Moellgardt, Spahlinger and others are not regarded as of proven value.

NEW BRUNSWICK

Dr. S. C. Murray of Albert, one of the oldest practitioners in the province, having passed his 83rd birthday, has been quite seriously ill for the last few weeks. He was removed from his home to the Moncton Hospital under the care of Dr. Ferguson. It has been reported that Dr. Murray is improving slowly.

In the report of Dr. G. G. Melvin, chief Medical Health Officer of the Department of Public Health, presented to the Legislature in March, there was a recommendation for the creation of a fourth Medical Health District, composed of the Counties of Madawaska, Restigouche and Gloucester—this area to be administered by a French speaking physician.

Hon. Dr. H. I. Taylor is to be congratulated on the progressive policy indicated by the budget of the Provincial Department of Health. Another district health officer is to be provided, and the grant to the Saint John County Hospital for tuberculosis is almost doubled. In the reports accompanying the budget, it is stated that tuberculosis shows a tendency to abate but the movement is slow. During 1925, the absolute number of deaths from tuberculosis was 405. During the year there were 52,231 school children examined by the Medical School Inspector, and 8,396 children and teachers successfully vaccinated. The number of vaccinations is expected to decrease annually as the work of this service progresses, until the annual vaccinations will represent only the number of new pupils. Diphtheria cases have greatly decreased, while small pox is now comparatively unknown. Typhoid showed a decrease from 421 cases in 1920, to 123 in 1926. In the year, there were 20 deaths from influenza. The birth rate in New Brunswick was 27.1 per thousand of population. It is the highest in Canada, with the exception of Quebec.

The scarlet fever situation has not shown much sign of improvement and the health authorities have been forced to stiffen their regulations, especially as to quarantine. In Saint John it has been necessary to summon and fine violaters of the quarantine regulations of the Board of Health. Dr. Wm. Warwick

has been indefatigable in his work during this epidemic.

Dr. S. H. McDonald appeared before the legislature in Fredericton in support of an amendment to the Medical Act, providing for an increase in the registration fee and for an increase in the annual dues to the New Brunswick Council of Physicians and Surgeons. It is expected that this legislation will be implemented by the present session.

The Saint John County Hospital report for 1926 shows that there were 121 patients in the hospital at the end of the year; there having been 252 admitted and 238 discharged in that period. Dr. Farris stressed the point that too many cases were still coming in in an advanced hopeless condition, although a beginning had been made especially in Saint John, to find cases at an earlier stage in their disease. Another notable fact in the report, was the number of children being discharged from the hospital cured.

It has been decided by the governing body of the Moncton City Hospital to proceed with the issuing of bonds for the necessary addition to the hospital, independently negotiations with the Moncton City Hospital having not been satisfactory to the hospital authorities.

Word has been received that Dr. P. H. Laporte of Edmundston, representing the New Brunswick Medical Society, had the privilege of placing a wreath on the tomb of Lord Lister during the services in Westminster Abbey recently.

On April the 12th the annual meeting of the St. John Medical Society was held at the Admiral Beatty Hotel. After dinner, election of officers resulted in the following appointments: President, Dr. J. R. Nugent; Vice-President, Dr. A. Stanley Kirkland; Secretary, Dr. R. A. Massie; Treasurer, Dr. A. S. Chesley; Librarian, Dr. L. M. Curren. The subjects under discussion were heatedly debated and may be synopsized in the resolutions adopted, which are self explanatory. A motion by Dr. L. M. Curren, seconded by Dr. G. A. B. Addy was made, "that the Premier of the Province be requested to arrange that no provision be made in the liquor control measure for physicians prescribing liquor." This resolution was adopted because under previous legislation the profession has so unjustly carried the onus for failure of prohibition.

A motion was made by Dr. E. W. Lunney, seconded by Dr. A. Stanley Kirkland that "whereas in a speech in the legislation on April 6, 1927, Henry Diotte, M.L.A., is reported in the press as saying 'that to-day nearly all vendors and doctors are criminals.' and whereas this society is of the opinion that Mr. Diotte's statement constitutes a libel on the majority of the members of the medical profession of New Brunswick, being untrue. It is resolved that: the New Brunswick Medical Society be requested to ask the speaker of the Legislative Assembly to have Mr. Diotte apologize for and retract the statement in the house where said statement was made, also that a copy of this resolution be sent to the speaker of the house, to Mr. Diotte, and to the press.

Similar resolutions were passed with reference to statements made by Mr. Angus MacLean of Bathurst and Mr. E. C. Atkinson of Sudbury. In each case, a copy of the resolution to be sent to the authors of the allegedly libellous remarks and to the press.

Dr. Walter W. White, Mayor of Saint John, then addressed the society on the forthcoming nationalization of the Port of Saint John. The question of Workmen's Compensation Board charges was then brought up and freely discussed, and a resolution adopted to be forwarded to the premier of the province asking that he instruct the Workmen's Compensation Board to adhere more closely to the schedule of charges mutually agreed upon by the Workmen's Compensation Board and New Brunswick Medical Society. The attendance at this meeting was very large, the interest displayed was gratifying, and a great deal of outstanding work was successfully cleared up.

A. STANLEY KIRKLAND

QUEBEC

McGill University, in connection with the Department of Public Health, has arranged to open a Clinic for Industrial Diseases at the Montreal General Hospital. Through the agency of this department students will be trained to act as advisors to corporations on technical and medical subjects, as well as to carry on health services wherever required in industry. In addition graduate nurses will also be given an opportunity of studying the functions of their profession as related to industrial hygiene and preventive medicine. The Metropolitan Life Insurance Company will contribute $5,000.00 a year for five years to further industrial hygiene conditions throughout the Dominion. It is expected that one of the graduates of the Medical Faculty of McGill University will take charge of this work.

Those who have given their time and talents to organizing and nurturing the Anti-Tuberculosis and General Health League must have been gratified at the report submitted at the annual meeting. While it is not possible to measure the results obtained by statistics or to point out definitely how many persons have been directly benefited by the campaign that has been waged so vigorously, everyone must have been struck by the record achieved. The League has used every avenue of publicity available for the extension of its propaganda. The chairman, Sir Arthur Currie, in his address pointed out that at least 2,000 deaths and 20,000 cases of acute illness could in Montreal alone be prevented each year. It is not only an indication of advance in our social welfare and our sanitary administration that infant mortality has been decreased and general health conditions improved, but it is a valuable testimonial to the efforts of those voluntary agencies which are working for the public welfare and the general health of the community.

In spite of the fact that Notre Dame Hospital has been in its new quarters only two years, its capacity is now taxed to such an extent that the Board of Governors is seriously contemplating erecting the final wing of the building and making extensions to the St. Paul Hospital for contagious diseases, which will, not counting a much-needed nurses' home, cost some $1,250,000. This was one of the important statements made in the course of the 46th annual meeting of the institution recently. The year 1926 as shown by the report of Dr. A. Lessard, the superintendent, had been marked with greatly increased activity in all its branches of work, so that in spite of the fact that the city and the Provincial Government have been generous in their contributions, a deficit of over $30,000 had occurred.

That the infant mortality rate in Montreal had decreased considerably since 1910, and that in the Protestants' Infant Home, there has not been a single

XUM

death for four years, were facts noted at the 57th annual meeting of the board of management of that institution. Dr. Duncan P. Anderson, medical director, congratulated the lady superintendent on the health record of the 41 children under her care, and referred to the excellent care that had been given to the teeth of all in this institution by Drs. Campbell, Morris and Winston Bushell.

The hospital for the insane at Bordeaux will be occupied shortly by approximately 400 patients. Dr. A. H. Desloges, general medical director of institutions for the insane in the Province of Quebec, strenuously objects to the term "criminal insane." "There are no criminal insane" Dr. Desloges said, "When a man is insane he is irresponsible, therefore he cannot be a criminal, but there are mentally sick people who are dangerous to themselves and to society at large. It is for this class that we have built the new wing at Bordeaux. Some of these insane have a tendency to commit suicide and must be prevented from executing their destructive plans. We are concentrating at Bordeaux all the dangerously insane who were previously scattered over the province in various institutions."

The Boards of Management of the Royal Victoria Hospital and the Montreal General Hospital, with which have been amalgamated the Montreal Maternity and the Western Hospitals, are appealing to the generosity of the public to provide funds required to cover the accumulated deficits on operations incurred during the last five years, to complete payment for the construction of the new Montreal Maternity Pavilion of the Royal Victoria Hospital and the Nurses' Training School of the Montreal General Hospital; also to provide means for certain necessary extensions to the hospital to enable it to provide necessary accommodation for the sick in this growing city. The urgency of the needs upon which the appeal is based is fairly set forth in a letter which is issued over the signature of Sir Vincent Meredith, President of the Royal Victoria Hospital, and Colonel Herbert Molson, President of the Montreal General Hospital, who bear testimony to the efficiency of the administration in each hospital and the high standard of hospital service rendered.

Dr. E. W. Archibald, Professor of Surgery and Director of the Surgical Department of McGill University, received recently the Honorary Fellowship of the Royal College of Surgeons, of London. The convocation took place on April 5th, the centenary of Lord Lister's birth. Dr. Archibald is the fourth Canadian to be thus honoured. The other Canadians are the late Sir Thomas Roddick, M.D.; Dr. F. J. Shepherd of McGill, and Dr. I. H. Cameron and Dr. Alexander Primrose of the University of Toronto. In addition to much original work accomplished in his hospital career, Dr. Archibald had a brilliant military career and his writings on war surgery are regarded as noteworthy by members of the profession.

GEORGE HALL

ONTARIO

The following series of post-graduate lectures took place at Queen's University during the winter months. These lectures were open to the members of the profession in Kingston and to the senior students of the university.

October 25th—Dr. John Fraser, Edinburgh, "Personal Experience of Student Problems."

November 5th—Dr. Maude Abbott, Montreal, "Congenital Heart Disease."

November 19th—Sir Andrew Macphail, Montreal, "The Small School."

December 3rd—Dr. J. H. Mullin, Hamilton, "Insulin Indiscretions."

December 17th—Dr. E. S. Ryerson, Toronto, "Formation of Gall Stones and its Relationship to Treatment."

January 21st—Dr. A. T. Bazin, Montreal, "Lessons Gleaned from Thirty Years' Experience with Appendicitis."

February 4th—Dr. C. C. Macklin, London, "Modern Views on the Structure and Function of the Bronchial Tree."

March 9th—Dr. G. E. Richards, Toronto, "The Radiological Investigation of the Urinary Tract."

March 18th—Dr. W. B. Hendry, Toronto, "Modern Aids to Labour."

April 8th—Dr. W. T. Connell, Kingston, "Irregularities of the Heart Beat."

MANITOBA

Misericordia Hospital has acquired the lot at the north-west corner of Sherbrooke and Wolseley immediately across from the entrance of the new wing of the hospital. For the present the ground will be used for parking purposes.

Tenders have been called for a new nurses' home for St. Boniface. The building will be six storeys in height and will be connected with the hospital by a tunnel located on the western side of the basement. There will be an elevator leading to all floors and 200 bedrooms will be laid out in the building with a chapel and recreation room for the staff. The cost will probably be $250,000 when fully equipped and completed.

Prof. J. J. R. Macleod of Toronto University was the guest of honour at a luncheon tendered him in the Fort Garry Hotel by the Winnipeg Medical Society on April 8th. He addressed the large gathering on "The place of physiology in medicine" and after showing that Harvey and Lister were enabled to arrive at their great discoveries by virtue of their training in the exact methods of science, he pointed out that physiology stood midway between the pure sciences of physics and chemistry on the one side and medicine on the other. In proposing a vote of thanks Dr. Chas. Hunter referred humorously to the earlier associations of Prof. Macleod, Dr. J. E. Lehmann and himself.

Dr. T. A. Pincock, a graduate of the Manitoba University and a medical missionary in Szechwan, Western China, addressed the Canadian Club of Winnipeg on March 30th on the subject "Impressions of Old and New China."

The fourth Gordon Bell Memorial Lecture was delivered in Lecture Theatre A of the University on April 22nd. The lecturer was Prof. Edward O. Jordan

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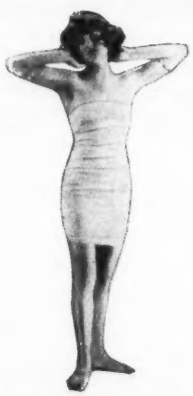

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of the Department of Pathology and Bacteriology of the University of Chicago and his subject was "Food poisoning." Much was expected from a man of such eminence in bacteriology and his hearers were not disappointed. Dr. J. D. McEachern, president of the Winnipeg Medical Society, presided and introduced the speaker.

At the meeting of the American and Canadian Section of the International Association of Medical Museums in Rochester, N.Y., on April 14th, Dr. Maude Abbott of Montreal, and Dr. Digby Wheeler of Winnipeg presented a communication on "Double aortic arch with pulmonary atresia in a man of 29," illustrated with the specimen procured at autopsy.

Dr. William Boyd read a paper on "Pulmonary arterio-sclerosis associated with primary carcinoma of the lung," on April 15th before the annual meeting of the American Association of Pathologists and Bacteriologists at Rochester, N.Y.

Mr. Lennox Gordon Bell, son of the late Dr. Gordon Bell, has been elected president of the Manitoba Medical Students Association for 1927-28.

To the March number of the *Bulletin of the Manitoba Medical Association* Dr. Bruce Chown contributed an interesting article on the founding of the Manitoba Medical College in 1883.

A party of five members of the American College of Surgeons returning from the Pacific coast where sectional meetings were held gave interesting clinical addresses and conducted hospital conferences in Winnipeg on April 20th. The party comprised Dr. Philip H. Kreuscher, Chicago, Professor of Clinical Orthopædic Surgery, Loyola University School of Medicine; Dr. Bowman C. Crowell, Associate Director of the American College of Surgeons, Director of Clinical Research and former Professor of Pathology at Jefferson Medical School, Philadelphia; Dr. Malcolm T. MacEachern, Associate Director of the American College of Surgeons, Director of Hospital Activities; Dr. Allan Craig, Associate Director of the American College of Surgeons, and Father Moulinier, Director General of the Catholic Hospitals of America. Dr. Kreuscher gave addresses on the "Management of fractures about joints" and on "Knee joint injuries" both of which were illustrated with lantern slides. Dr. Crowell had some interesting material along pathological lines. A clinical luncheon at the General Hospital and a dinner at the Royal Alexander Hotel of the Fellows of the Manitoba Branch rounded out the day.

Dr. and Mrs. Jasper Halpenny of Texas, are visiting friends in Winnipeg where Dr. Halpenny was previously the Professor of Surgery.

Dr. Chas. Hunter addressed a meeting of the Winnipeg Health League at the Music and Arts Building on March 22nd, taking as his subject "The prevention of nervous disorders in adolescence."

At the meeting of the Osler Society held on March 29th, Miss Ferguson read an interesting paper on Louis Pasteur and Dr. T. A. Pincock gave an account of the practice of a medical missionary in China.

Dr. T. G. Hamilton addressed the University Women's Club on "Psychic problems."

The Kiwanis Club of Winnipeg recently presented the Children's Hospital with six ultra-violet lamps, three phototherapy lamps, one vario-frequency machine and a desk, the whole representing an expenditure of nearly $3,500.00.

A survey of school children in Manitoba three years or more below the standard in their school grades or who present other signs of mental defficiency is being carried out under the direction of Dr. A. T. Mathers.

Dr. S. W. Prowse, Dean of Medicine and Dr. H. W. Wadge of Winnipeg, took part in the programme of the Medical Services Conference at Ottawa recently.

The new wing of Grace Hospital was formally opened on April 24th by His Excellency The Governor-General, the Right Honourable Viscount Willingdon, G.C.S.I. Commissioner Chas. T. Rich presided. The new building is four storeys in height, contains 72 beds, four case rooms, an operating room, surgeon's room, and is equipped with an elevator. The semi-private wards are arranged on the cubicle system, and the building throughout is thoroughly modern, and gives evidence of careful planning.

ROSS MITCHELL

SASKATCHEWAN

Dr. A. E. Childe of Riverhurst has moved his office to Beechy.

Dr. P. H. Salmond, late of the Mental Hospital, Battleford, is now at Towson, Md.

Dr. E. R. Myers of Saskatoon, left with Mrs. Myers last week on an extended holiday to Europe, where he will undertake post-graduate work.

The regular monthly meeting of the Regina District Medical Society, was held on April 6th, following a dinner in the Grey Nun's Hospital. Dr. Palmer gave a paper on "Nasal septic focus in relation to general diseases." Dr. Janet Henderson gave a paper on "The development and anatomy of the female pelvic organs." Also one or two very interesting clinical cases were presented.

The Saskatoon District Medical Society met on April 6th, the meeting taking the form of a dinner in the Hudson's Bay Restaurant. After the dinner the members were addressed by Professor J. J. R. Macleod, Professor of Physiology of the University of Toronto, his subject being "The general plan of metabolism." This was a very fine lecture and a good deal of discussion followed, led by Professor Scott of the University of Saskatchewan. The meeting was a great success; there was a large attendance and all regarded it as one of the most successful meetings this society has ever had.

ALBERTA

Dr. F. C. Day, who formerly practised at Vermillion, has settled in Vancouver.

Dr. A. E. Archer of Lamont, recently presented the needs of the Lamont General Hospital to the Board of Home Missions of the United Church when they granted $20,000 for the erection of an administration building and an additional number of private

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wards. This hospital was erected to render service to the Ukrainians and last year treated 2,600 individual patients, one-half of them being out-door patients.

Dr. Thomas H. Whitelaw, Medical Officer of Health of the city of Edmonton, Alberta, was united in marriage to Miss Olive Bailey, R.N., on February 9th, 1927.

Dr. W. W. Auld of Calgary, is now in Philadelphia, where he will spend the next two months at the University of Pennsylvania in post-graduate genito-urinary studies.

By what process of reasoning a jury will occasionally arrive at a verdict is difficult to comprehend. This was exemplified in a recent case in Alberta where a physician was called to attend a patient in labour. Arriving at the home some thirty minutes later he was told that the child was born and he was refused admittance. Shortly after the child died of asphyxia neonatorum. An action was instituted against the parents who were brought into court. The jury gave a verdict of "not guilty" so far as the parents were concerned, but rebuked the physician for not having forced his way into the house against the wishes of the father and grandmother of the child, when he was told that he was not needed.

On April 5th Professor J. J. R. Macleod of Toronto University, addressed the physicians of Edmonton on the subject of "The place of physiology in medicine."

During the week of April 11th to 16th the first of the 1927 series of extra-mural post-graduate courses under the auspices of the Canadian Medical Association were given in Alberta by Drs. T. McPherson, F.R.C.S. (Eng.) and W. E. Scott-Moncrieff, F.R.C.S. (Edin.), both of Victoria, B.C.

The itinerary included Medicine Hat, Lethbridge, Red Deer, Calgary and Edmonton.

The physicians of Calgary and adjacent towns were given an opportunity of attending clinics and lectures on April 15th. The clinics were given in the morning at the General Hospital, Dr. Scott-Moncrieff discussed the various eye and ear lesions manifest in the patients presented for examination. These included opacity of the cornea due to vesicular keratitis, corneal ulcer with concomitant iritis, chronic otitis media following scarlet fever; the diagnosis and treatment of each condition were thoroughly gone into.

Dr. McPherson reviewed the case records of several patients including one who had been operated on for duodenal ulcer on whom a plastic operation on the pylorus as well as a posterior gastro-enterostomy had been performed. Epigastric pain and hæmorrhages followed in the wake of the operation, due probably to gastro-jejunal ulceration at the site of the anastomosis. A case of suspected acute cholecystitis was discussed as well as one of chronic cholecystitis with gall-stones.

At the evening lectures at the Holy Cross Hospital Dr. Scott-Moncrieff took as his subject, "An address to general practitioners on some eye, ear, nose and throat problems." The lecturer gave an excellent review of many of the commoner affections of the eye. Iritis, glaucoma and traumatic cataract received special attention. The differential diagnosis of iritis and glaucoma was thoroughly discussed. Acute and chronic otitis media were considered, chiefly in the light of necessary treatment while the indications for the radical mastoid operation were clearly set forth. The necessity for early operation in acute mastoiditis following influenza was emphasized.

Dr. McPherson gave an instructive lecture on "Peptic ulcer of the stomach and of the duodenum." He reviewed the various theories in regard to the etiology of peptic ulcer, no one of which has so far proved adequate in elucidating the real cause. The special pathology of each type of peptic ulcer was well covered as well as the various means at our command in diagnosis. The different surgical procedures to be adopted in treating gastric and duodenal ulcers were thoroughly discussed, including the somewhat radical operation of partial gastrectomy for duodenal ulcer, which has some strong continental advocates.

On April 16th representatives from the American College of Surgeons visited Calgary giving lectures and discussing various hospital problems. Included in the party were Dr. Malcolm T. MacEachern, Dr. B. C. Crowell, Professor Philip Kreuscher and Dr. Allan Craig. At the Holy Cross Hospital Professor Kreuscher gave a lecture on "Fractures about the joints" illustrated with numerous lantern slides. At the Palliser Hotel in the evening Dr. B. C. Crowell gave a lecture on various types of bone sarcomata, while Professor Kreuscher discussed certain injuries to the knee joint. Dr. McEachern followed with an illustrated talk about his recent visit to Australia and New Zealand connected with hospital organization.

At the annual meeting of the Calgary Medical Society held April 5th, Dr. J. S. McEachern gave an address on "The life and work of Lord Lister." The following officers were elected for 1927-1928: President, Dr. A. I. McCalla; Vice-President, Dr. A. W. Park; Secretary, Dr. W. S. Quint; Treasurer, Dr. W. W. Upton; Executive Committee, Drs. G. E. Butterwick, E. Sisley, and A. E. Shore.

G. E. LEARMONTH

BRITISH COLUMBIA

During the month of March the Executive-Secretary of the British Columbia Medical Association visited Chilliwack, Ocean Falls, Prince Rupert, Anyox, Stewart and Port Simpson, etc. One hundred per cent membership fees were paid and many matters of an economic nature dealt with. The doctors at Chilliwack and on the coast evinced the greatest interest in the programme of the forthcoming Vancouver Summer School and there is no doubt that this year a much larger number of out-of-town physicians will be in attendance.

The Alberta Medical Association has asked the British Columbia Medical Association to supply a surgeon and eye, ear, nose and throat specialist to give a post-graduate course under the auspices of the Canadian Medical Association in April. They will be required to give clinics and lectures in Lethbridge, Calgary, Red Deer and Edmonton. Dr. Thos. McPherson and Dr. W. E. Scott-Moncrieff, both of Victoria have been selected for this duty and will leave Vancouver on April 10th.

Dr. G. F. Strong of Vancouver, recently gave an address on "Hypertension," before the Spokane County Medical Society at Spokane.

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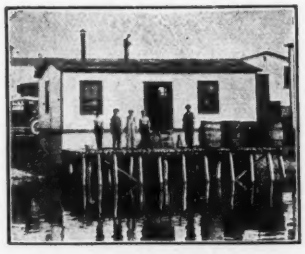

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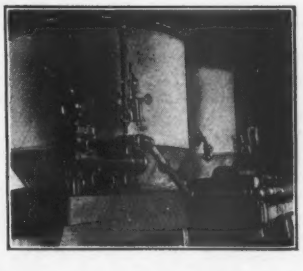

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Dr. T. L. Buttars, late of Courtenay, is now practising in West Point Grey, Vancouver.

Dr. and Mrs. T. H. Agnew of Vancouver have left for a trip in southern California.

Dr. Neil M. McNeill of Vancouver, who went to Europe last fall, has had two months strenuous post-graduate work in Vienna, and is leaving early in March to spend one month in London. He expects to be home about the middle of May.

Dr. G. M. Foster of Vancouver has recently returned to the city after a holiday trip via the Panama to New York.

The doctors attending the King's Daughters' Hospital, Duncan, B.C., at a meeting held March 8th, organized themselves into a "Hospital staff." Officers elected as follows: President, Dr. H. N. Watson; Secretary-Treasurer, Dr. H. P. Swan.

UNITED STATES

The Chicago Medical Society announces that its summer clinics will be held during the month of June. In 1926 registrations, to physicians, were limited to those living in Illinois, but increased facilities make it possible to accommodate many more than last year. Registrations therefore will be open to physicians from other states and to as many as may be accommodated, in the order of their registrations. Admission will be by card only, issued by the Chicago Medical Society and no registration card will be issued until registration fee is paid. The first two weeks course will begin on June 13th and end June 24th. The second two weeks course will begin on June 27th and end July 8th.

Book Reviews

The Artificial Light Treatment of Children in Rickets, Anæmia, and Malnutrition. Katherine M. L. Gamgee, M.R.C.S., D.P.H. 172 pages, 16 plates, 33 illustrations. Price 10/6 net. H. K. Lewis & Co., 136 Gower Street, London, W.C.1, 1926.

This book is an account of the experiences of the author in the operation of the artificial light treatment centre in the town of Hull, England. The ultra-violet rays have been found, at this centre, to be of value for: (1) infants or children who are "not getting on"; (2) cases of early or severe rickets, tetany and spasmophilia; (3) the child of the indifferent or neglectful parent; and (4) the expectant mother herself. "Apart entirely from cases of rickets and neglected children, the types of children doing badly in a big city, and for whom the artificial light treatment has proved serviceable are characterized as follows: (1) The pasty-faced, *debilitated*, and malnourished child with flabby muscles and (possibly) enlarged tonsils. (2) The *nervous* child, met with nowadays in surprizing numbers in all classes, many of whom are inveterate bed-wetters. (3) The *catarrhal* child. (4) *The mentally dull and backward child*, for whose backwardness no cause can be found. (5) The convalescent child. (6) The child who is a *tuberculosis contact;* and (7) the child with *definitely enlarged glands* which may or may not prove to be tubercular.

A chapter is devoted to a discussion of rickets; its incidence, signs and symptoms, etiology and the modern views as to its causation. In discussing the therapeutic action of artificial light, the author states that the skin of children from one to about three years of age was definitely less sensitive to the rays than that of the average adult; and that doses twice as great as those producing erythema in the adult failed to produce any visible reaction on the skin of babies; also, although it may be true that pigmenting patients do best, it is probably not true that non-pigmenting ones necessarily do badly. Light tolerance can be established without pigmentation. One of the fundamental and important properties of the ultra-violet rays is to increase the bactericidal power of the blood, and in this way increase the resistance of the individual to disease. It also produces improvement in the simple anæmias, increases the white cell count and leads to a rise in the calcium and inorganic phosphorus of the blood serum. A marked improvement is also produced in whining, irritable children who become more placid and happy. In such children, as a rule, it is noted that weight increases, appetite and activity are markedly increased, and there is improved muscular tone and increased rapidity in the calcification of bones.

The practical and administrative organization of a public health light clinic is discussed in considerable detail; quarters, equipment, staff, records and after care are outlined. A chapter is devoted to dosage and the standard of measurements, and another is given to the use of the x-ray in the diagnosis and treatment of rickets, and is illustrated with x-ray photographs to show the process of healing under treatment by the ultra-violet rays. Sunlight, open air and hydrotherapy are advocated as adjuvants in the treatment. Twenty case histories of rickets, anæmia and malnutrition are appended, showing the improvement produced.

The book is a handy manual for those interested in the use of quartz lamp therapy. It is very readable.

R. R. STRUTHERS

Orthopædic Surgery. W. A. Cochrane, M.B., Ch.B., F.R.C.S.E. 528 pages, 504 illustrations. E. & S. Livingstone, Edinburgh. Macmillan Co. of Canada, Toronto, 1926.

Surgical text-books to be of real value to students must be logical. A collection of isolated facts, be they ever so true and important, will invariably fail to impress the student mind unless they are presented in such a way that they at least appear reasonable. To attempt, therefore, to present a subject such as orthopædic surgery without reference to anatomy and pathology appears to us to be a mistake that destroys the value of this book as a text-book for students. Attention must be drawn to this mistake for it seems to be the tendency of the times to relegate the teach-

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ing of anatomy to the so-called anatomist and pathology to the so-called pathologist, gentlemen who have little or no knowledge of the practical applications of their teaching. As a result the modern student is inclined, when he reaches his clinical years, to look upon anatomy and pathology as subjects which he has left behind him; and unless he happens to fall into the hands of clinical teachers who emphasize the importance of basing diagnosis and treatment on previously gained scientific knowledge, he is apt to degenerate in spite of our lengthened curricula, into the habits of empiricism. It is of the utmost importance, therefore, that text-books on surgical subjects should show to the student in as logical and interesting a manner as possible the close relationship between the surgical treatment of disease and the special anatomy and pathology associated with it.

In other respects this book has much to recommend it. It outlines in a clear and practical way the various modern methods of dealing with the disabilities of the locomotory apparatus and emphasizes the methods which commend themselves to the author. For the student or practitioner, therefore, who wishes to look up for the moment the principle of the modern treatment of some particular disease or deformity it will prove useful. In this regard its value is limited, however, as the details supplied are insufficient to serve as a guide to one who wishes to carry out the treatment.

When compared with other text-books on orthopædic surgery one feature is decidedly new and possibly important. The author has evidently been convinced of the value of the structural and functional conception of disease as presented by the school of Goldthwait of Boston, and of its bearing on many problems in clinical medicine and surgery, such as chronic joint disease, static deformities, chronic nervous disease and visceroptosis. At least a quarter of the book is devoted to this subject. How great the influence of Goldthwait will be on orthopædic surgery is doubtful as his teaching commends itself more readily to the physician and the physiotherapeutist than to the surgeon. It is interesting to note, however, these teachings appearing for the first time in text-book form, and presented by a surgeon who is apparently perfectly familiar with them.

The book is profusely illustrated and a creditable example of the publisher's art.

Hunter Tod's Diseases of the Ear. Revised by George C. Cathcart, M.A., M.D. 2nd. edition. 333 pages, illustrated. Price $3.50. London and New York, Oxford University Press. Canadian Agents, McAinsh & Co., Toronto, 1926.

In the preface the present author expresses the hope that, in addition to being a practical handbook for the senior student and the general practitioner, it may be of some service to the student or candidate for the new Diploma of Laryngology and Otology. The chapters on acoustics, anatomy, and physiology will be of great value to candidates for the Diploma as a concise summary and review before examination.

The special remarks devoted to otitis media in infants will be appreciated by the student, as well as the chapter on diseases of the ear in acute infections and in other diseases. Of particular interest to the profession are the remarks on artificial aids to hearing.

A chapter is devoted to the consideration of acute inflammation of the middle ear as a stage of inflammation occurring between acute catarrh and acute suppuration. This extra subdivision does not seem to be fully justified in the text and would tend rather to complicate a difficult subject.

The Zünd-Burguet Electrophonïde is recommended in a number of ear conditions where the pathology in each case differs widely, and this may serve to mislead the thinking student.

The physiology and examination of the vestibular system is very clearly, concisely, and completely set forth. The new method of Wodak is given, where small quantities of water are used in the caloric test. This will surely tend to a more general use of this very simple and very informative test.

This little book, clearly and simply written, will be a very valuable addition to any physician's library.

W. J. McNALLY

Practical Medicine Series. General Surgery. Edited by Evarts A. Graham, A.B., M.D., under the general editorial charge of Charles L. Mix, A.M., M.D. 726 pages, illustrated. Price $3.00. The Year Book Publishers, Chicago, 1926.

This little volume of 684 pages contains many illustrations, reproductions of diagrams, actual photographs and x-ray plates. It is a concise, easily read and very complete résumé of the surgery that appeared in the literature during the year 1925 and part of 1926. The references are easily followed as they occur as foot-notes to the articles abstracted on the page above. So well is the abstracting done that one often reads through a subject without appreciating that it has been abstracted.

For the clinical teacher the little volume presents many points of value. It is possible to collect statistics, illustrations and the new data for a brief clinic on almost any subject, by reference to this book. The cancer question is covered in 20 pages of well illustrated and well written abstracts, taken from over 20 specified articles. For the general practitioner and surgeon it offers a very ready and handy reference for almost any ordinary demand. The index is adequate, and, though the volume does not contain all surgical conditions met with in larger text-books, it will be of value to the busy man who does not care to read all current literature.

The new editor appears to have worn well the mantle fallen upon him from the late Dr. A. J. Ochsner.

CHAS. K. P. HENRY

Reminiscences of Lister. Sir Hector Clare Cameron, C.B.E., LL.D. 45 pages. Price 1s. net. Jackson, Wylie & Co., Glasgow, 1927.

Lister and the Lister Ward in the Royal Infirmary of Glasgow. 132 pages, illustrated. Price 12/6 net. Jackson, Wylie & Co., Glasgow, 1927.

So much has already been said and written about Lord Lister that there may be almost an element of surprise in the contemplation of the renewed outpourings of tribute in this his centenary year. All have paid homage again to the discoveries by which he has so greatly lightened the physical sufferings of mankind, but when that has been done other aspects of the man and his work have been found to demand our admiration and excite our attention. How surely is this inexhaustibility of interest a distinguishing mark of a great man!

Not a little of this interest perhaps is due to the fact that there are still several living who worked with Lister, although the interest of his story will, we think, be undiminished even in future generations, when those who now serve as living links will remain only as memories. One such link has presented us with these "Reminiscences" of Sir Hector Clare Cameron. As Sir Donald MacAlister reminds us in the preface, there are none amongst the sadly diminishing band of "eyewitnesses and ministers" of Lister's beneficent revolution in surgery "who surpass Sir Hector in intimate knowledge of the facts, in loyalty to the Master's memory, or in competence to appraise the changes he effected in surgical methods." One will of course find more fully painted portraits of Lister in his larger biographies, but still one gains from these Reminiscences an impression of the great surgeon's

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"divine discontent with things as they were in the surgical world, his patience and perseverance, and his extraordinary industry in the work he set himself to accomplish." A "divine discontent" his was indeed!

The second volume contains painfully interesting reading, for it tells the story of the struggle—the bitter, unavailing struggle—to preserve the "Lister Ward" of the Glasgow Royal Infirmary. No reasonable explanation apparently has or ever will be given for what is justly termed this supreme act of vandalism on the part of the Managers of the Infirmary. It was therefore deemed wise on the occasion of the centenary to issue not only a full account of the Ward and its history, but to effectively clear the citizens of Glasgow of any responsibility for its destruction. An additional section gives an excellent account of the Lister relics in the Wellcome Historical Medical Museum, London. H. E. MACDERMOT

A Statistical Survey of Three Thousand Autopsics. From the Department of Pathology of the Stanford University Medical School. William Ophüls, M.D., Professor of Pathology. 246 pages, 16 charts. Price $2.50. 1926.

This survey contains a mass of well arranged material which should be of value for reference. We note that tuberculosis easily ranks first in frequency in this series, but it would have been a point of added interest to determine in what proportion of cases this disease was found to exist without being the primary condition.

The frequency with which acquired syphilis was found to occur (9½ per cent of all cases) is startlingly high, and supports the view that this disease is present amongst our population to a greater extent than is generally suspected. H. E. MACDERMOT

Surgical Clinics of North America. Vol. vi, No. 6. New Jersey Number. W. B. Saunders Co., Philadelphia and London. McAinsh & Co., Toronto, 1926.

The New Jersey volume contains reports of clinics on cholecystitis, appendicitis, cleft palate, gynæcological subjects, etc. Among those worthy of special mention is one on spontaneous hæmorrhage into the sheath of the right rectus simulating acute appendicitis (a review of the literature is appended). An article on traumatic and infective lesions of the head stresses the importance of routine examination by the eye and ear specialists in medical and surgical cases, and also the value of their co-operation in treatment. An otherwise excellent article on "Painful shoulder" makes *no* mention of the value of scapular fixation by strapping, in the treatment of sub-acromial bursitis. L. H. MCKIM

Roentgen Rays in Dermatology. A handbook for practitioners and students. Arzt and Fuhs of the Reihl Clinic, Vienna. Authorized translation by C. Kevin O'Malley, M.C., M.B., of Capetown, South Africa. Publishers Bailliere, Tindall and Cox, London, 1927.

The original text contains 156 pages and the translation 202 pages and 57 illustrations. The increase in pages being due to larger print, the paper is heavier and the illustrations are excellent. All x-ray men should study this little book and it should surely be a handbook for the dermatologist.

The physics of x-ray are well covered and x-ray equipment as used in Europe is well described, but as the gas tube is used mostly there is very little information as to the use of the Coolidge tube which is nearly universally the instrument of the dermatologists of this continent, and although the technique of dosage, methods of exposure and regulation of exposure are applicable to the Coolidge therapy and are very carefully described yet the MacKee method of arithmetical computation of dosage is not touched upon. The measurements of the quality of ray with the Christen absorption meter and the adoption of a certain band of hard rays as most beneficial when filtered through light aluminum filters is well discussed. In spite of opinions to the contrary the authors are convinced that certain pathological conditions are stimulated. The charts showing the arrangement of fields of exposure are helpful and they prefer a six field arrangement in scalp therapy. The dosage is on the whole perhaps a little more intensive than used by the followers of MacKee. The biological effects of x-ray are very carefully described and will afford instruction to anyone using this therapy as also the chapter on x-ray injuries and their treatment.

The treatment of specific conditions is carefully explained under the following headings, Affections of the hair and specific granulomata; Diseases of the epidermal glands and coccal infections; Diseases of the nails and irritative dermatoses, Tumours of the skin and miscellaneous disease. An appendix at the back gives the authors' dosage formula and remarks concerning treatment of a large list of skin diseases arranged in alphabetical order and the subject index is very thorough.

The authors are to be congratulated on this publication and the translator will be thanked by English speaking dermatologists for his extensive and painstaking work in putting this text in English. MacKee's book published in 1921 is its only competitor and I understand has been out of print for some years.
W. R. JAFFREY

Symptom Diagnosis Regional and General. Wilfred M. Barton, A.M., M.D., F.A.C.P., Associate Professor of Medicine, Georgetown University, and Wallace M. Yater, A.B., M.D. 851 pages. D. Appleton & Co., New York, 1927.

In this volume symptoms are classified under two headings, first, "Regional," and second, "General." In every carefully taken history there are some symptoms that stand out prominently. One patient complains of cardiac pain, another of pain in the abdomen, so that to consider the various symptoms in a regional way seems most convenient and logical.

It is at least illuminating to read the chapter on the very common and distressing complaint of "Headache." One is impressed by the many causes enumerated. It is probably because we have not considered symptoms in this particular regional way. So also "Dysphagia," either with or without pain; we only think of it in a concrete way when it looms up as a distressing symptom of some special disease.

One can readily see where some trimming could be done, particularly in the less common diseases. Acromegaly appears in many places, in headache, facial form and expression, hands and feet, etc., when one mention might be made and a further reference when needed, but that in a measure would defeat the writer's object in giving us a ready reference.

The general symptoms are well arranged and complete, as evidenced by the chapter on "Skin Manifestations in Different Diseases." The teaching is orthodox rather than theoretical, and the book is well printed, well indexed and for any student of medicine is a valuable reference work. FRED. J. HART

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